## The Commercial Car Journal

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## State Council of Defense of Connecticut Proves Value of Return-Loads Bureau to Shippers

Chambers of Commerce and War Bureaus Keep Nine Hundred Miles of Return-Loads Routes Open During Winter

By W. S. CONNING

N Connecticut we have four mediums of transportation: First, railroads; second, trolley companies; third, boats; fourth, motor trucks.

The fourth method brings us down to the real subject in hand, Motor Truck Transportation. In this connection, let me say that while shippers are fairly well acquainted with railroad, and to a lesser degree, with shipping by trolley, few know anything about the use of motor trucks, except for local trucking purposes. Here we have to go into a campaign of education and overcome prejudices of traffic men very generally.

#### Shipping Problems Left to Clerks

It is a well known fact that manufacturing heads have made very little study of the shipping problems, apparently believing their responsibility ends when the goods are finished, boxed and placed in the shipping room, leaving it to clerks to decide how the goods are to arrive at their destination.

The whole trouble in a great many cases could have been avoided by the study of shipping by the heads of our corporations. This neglect of detail produced trouble enough in peace times, but under war conditions brought first, delays and finally disaster to most of the manufacturing sections of our country, and let me say right here that this end of the business of a corporation is just as important as the manufacture of goods.

#### Return-Loads Plan Inaugurated

The return-load (or back-load plan as it was first called in Connecticut, the change having been made on the request of Geo. H. Pride to coincide with other States' plans) was started in October, 1917, by the Transportation Committee of the Connecticut Council of Defense, and I was asked to carry out the work.

Through the State Automobile Department, we sent out return cards to all the motor truck owners in our State, asking them to return the cards advising us if their trucks were idle; if so, for how much of their time, also capacity of truck and if they were willing to carry return loads. We received about seven hundred replies to these questions from people who wanted

to get work for their trucks. Nearly 75 per cent of these replies came from the central and southern part of the State where the great munition plants are located, and where freight was tied up and terminals blocked almost to a standstill.

In the cities of New Haven, Bridgeport and Hartford, the terminals were congested and at the same time many idle trucks were available for relief, but no method of coordination had ever been employed to put the trucks into practical service.

We then started to establish transportation bureaus in every large city, placing them under "Return Load" entry in the telephone book. At this bureau we register the number, name and address of every idle truck in the section covered by the Bureau, also giving the capacity of the truck, and whether idle all or part of the time. We also urged that no truck go empty and that every truck carry a load both ways.

#### All Trucks Registered and Indexed

Also, we have registered all trucks—whether publicly or privately owned—that are run on routes from city to city and the days when deliveries are made.

We also furnish this information to other bureaus in case there is any over-lapping of routes in any territory.

The Return-Load Bureau must have an active head, and the value and success of each Bureau depends very much upon the "horse sense" of its head as an active man who can use the telephone and get in touch with various shippers and find out their needs and to what points they want to move freight; also, if they have anything to be returned from such points. In this way the Bureau soon acquires valuable information for the truckmen.

As soon as a Bureau is established, the State Council notifies each truckman in the territory to register at such Bureau and furnishes a list or file to the Bureau. It also contains a list of the shippers in the territory and sends out a letter to each one, explaining the plan and asking them to call upon the Bureau when in need of help.

We had many meetings with boards of trade, traffic men's associations and similar organizations explaining our plans in great

detail. This seems to have been the best way to gain co-operation because circular letters generally fail to reach the proper authorities.

In this connection I want to say that there is no difficulty in securing trucks that are idle. In cities of about 100,000 it is safe to say there are 100 trucks ranging from one to five tons capacity idle, either all or part of the time, and many more owned by private firms who are willing and anxious to carry return loads and make their trucks more efficient.

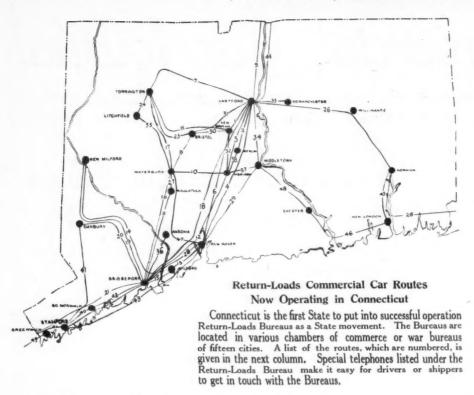
The greatest difficulty that we encountered at first was the seeming indifference on the part of the shippers, or it would be better to say the traffic men of the large corporations. These men have been in the habit of doing their work one way, and it is very difficult to get them to change their methods.

#### Idleness of Trucks Not Realized

When we started our plans we were first told that there were no idle trucks. Then, when we were able to prove there were many, they told us that all the factories in Connecticut were doing Government work and could get their goods through by the priority tags. Many of these same people are now shipping tons upon tons of freight every day by motor truck; and I have in mind an officer of a plant employing 18,000 men who told me he could not see where he would have any use for motor truck transportation, and when I asked him to help me form a Bureau in his city, thought it entirely unnecessary, but after much argument finally helped us to do it.

Within a week of its formation, he was one of the largest users, calling upon the Bureau for trucks to move 25,000 pounds to New York as the initial request, and has taken advantage of the plan every day since, finding the motor truck more mobile than the priority tag.

In Connecticut, where the principal industries are the manufacture of various sorts of metals, the finished product of one factory is the raw material of its neighbor; consequently, in these times, when short haul freight business by railroads has broken down almost entirely, the motor truck, and in some cases the trolley, has



come to the rescue and kept factories running that would almost certainly have closed down but for this help.

## Development Has Been Rapid

We have now about 14 Bureaus established, as shown on the accompanying map, which also shows the various truck routes and location of Bureaus. These maps are being furnished each Bureau, together with a card index showing the location of the truckmen represented by each route number shown on the map. This gives the Return-Loads Bureau very general information and saves time when a truck is wanted in any part of the State.

In the small towns where there are only a few trucks, the State Council has asked their town committeemen to post the truck information in a central place where any shipper can readily obtain the information. We are, however, trying to keep in touch with the small towns through the larger Bureaus.

It is very hard to estimate or obtain reports of the actual value of the plan for the reason that when a shipper gets in touch with a truckman and has his business well taken care of, both he and the truckman cease to call upon the Bureau for help until one or the other is again stranded and needs a helping hand.

Our Bureaus were all started in chambers of commerce or a like organization, but several have since been made a part of the war bureaus organized by the State Council of Defense, whose plan is to consolidate all war work under one head, making our transportation bureau heads members of its war bureau committee. This has been proven very satisfactory where there is a live man in charge of the Bureau.

## Problems Left to Truckmen and Shippers

The question of rates has come up many times, but we have always taken the attitude that the shipper and truckman must

settle that question between themselves, it being fairly well established that as return loads cut the cost of the carrier, he has therefore cut the cost to the shipper where he can get his back load assured.

The State Council of Defense assumes no liability for loss or damage in shipments, leaving that for adjustment between the truckmen and shippers as is usual in such cases.

The whole function of the Traffic Bureaus is to get the truckmen and shippers together.

## Similar Bureaus Wanted in Other States

We have been able to secure many return loads for our Connecticut trucks that are going into New York and Massachusetts by reason of our Bureaus and the information on file with our Secretary in Hartford, but it will greatly facilitate the movement to and from other States when they have established Bureaus where our truckmen can call for loads or arrange for them before leaving Connecticut with a load for outside of the State.

#### Trucks Opened 900 Miles of Roads

One illustration of the change in motor trucks was given me the other day by Charles J. Bennett, our very efficient highway commissioner. He said: "In the old

days, when we had a snow storm, the highway departments practically quit for the time being. Now, it is quite different as the telephone is kept hot by truckmen all over the State howling for help in opening the roads." Consequently, after the big storm in December, we put our whole force on the roads and by nightfall of the day following had broken open 900 miles of road in our little state, and trucks were carrying coal and other necessities to outlying towns on railroad lines where they had been unable to get such necessities through.

## Motor Truck Routes

Rout	e No.
I	Hartford to New Britain
2	Hartford toBerlin
3	Hartford toMeriden
4	Hartford to New Haven
5	Hartford toSpringfield
6	New Britain to New Haven
7	Hartford toTorrington
8	New Britain to Torrington
9	Bristol to
10	Meriden to
ΙI	Bridgeport toNaugatuck
12	Meriden toBridgeport
13	New Haven to Milford
14	Milford to New Milford
15	Bridgeport to
16	Bridgeport to
17	Bridgeport to
18	Hartford toBridgeport
19	Bridgeport toNew Milford
20	Bridgeport to
21	Bridgeport to New York
22	Stamford to New York
23	Bristol toTorrington
24	Torrington toLitchfield
25	Norwich to
26	Hartford toNorwich
27	Waterbury toNaugatuck
28	Bridgeport to New Haven
29	New Haven toMiddletown
30	New Britain toBristol
31	Hartford toBristol
32	Meriden to New Britain
33	Hartford toSo. Manchester
34	Hartford toMiddletown
35	Waterbury toLitchfield
36	Bridgeport-Ansonia toDerby
37	Meriden to
38	Meriden toBerlin
39	Bridgeport toSo. Norwalk-
40	Stamford toNorwalk
41	Stamford to
42	
43	
44	Hartford toBoston-
45	
46	
47	
48	

## Return-Loads Bureaus

	Neturn-Louds Bureaus		
City	Location Telep	hone Num	ber
Bridgeport	Chamber of CommerceNoble	250 or	Return Load
Bristol	Chamber of CommerceNoble	100 or	Return Load
Danbury	War Bureau of C. of CNoble	1308 or	Return Load
Greenwich	Chamber of Commerce		Return Load
Hartford	Chamber of CommerceCharter	1856 or	Return Load
Manchester	War BureauCharter	489 or	Return Load
Meriden	Chamber of CommerceCharter	242 or	Return Load
Middletown	War BureauCharter	1245 or	Return Load
New Britain	Chamber of CommerceCharter	1553 or	Return Load
New Haven	War Bureau		Return Load
New London	War Bureau		Return Load
Norwalk	Chamber of Commerce		Return Load
Norwich	Chamber of CommerceCharter	1747 or	Return Load
Stamford	Chamber of Commerce		Return Load
	War Bureau		

## Boston Show Puts Optimism Into Dealers

Fifty-Six Makes of Commercial Cars Shown. A Dozen Ford Attachments. Tractors Create Unusual Amount of Interest

OSTON'S commercial car show. held the week of March 2-9 inclusive, will go down in the history of the motor industry as the most suc-cessful event of its kind in the If it served no other useful purpose than to demonstrate the fact that the commercial world is turning to the motor truck for relief from the existing freight conditions the show would have been a success. But it was more than a success; that is, if sales are any criterion.

If Boston dealers were optimistic previous to the show, they were more so before the show was 24 hours old, for from the time the doors opened until the closing time there was a steady stream of visitors to the basement of Mechanics building. It was a purchasing crowd and included representatives of practically every industry, business men who realize that the mechanical transport is the only practical means of solving the transportation problems confronting the country, and New England's freight terminals are con-

That the Boston show is assuming National proportions is evident from the interest taken in it by the truck manufacturer, several companies exhibiting in addition to the usual number of exhibits by factory branches. That Boston is held to be the distributing center for New England, and is considered a most important and profitable market, was proven by the presence of a number of factory representatives, these including the heads of the service and sales departments, as well as members of the engineering forces.

## Want Prompt Delivery

Even the conservative New England business man no longer questions the practicability of economy of the motor truck. This was proven by the fact that the majority of prospects were more interested in the possibility of an early and prompt delivery than in constructional details. Practically the first question asked was, "Can you make prompt delivery?"

The problem of delivery is being solved by many dealers driving the trucks over the road, particularly when usual transportation fails. Many of the trucks exhibited came over the road and one well known Boston factory branch has eliminated the railroad entirely. "I find the plan perfectly feasible," said the factory representative. "Each fleet is accompanied by expert drivers and mechanicians, and any little adjustment needed is made. As a result the trucks reach us in perfect operating condition. The carburetors are adjusted to obtain the maximum mileage and many other details attended to. The truck is delivered ready for hard work. It is a decided advantage to the customer, for he loses no time, as he frequently might in running to the service station for adjustments, etc., on a brand new truck.'

As in the past, the truck exhibits attracted a large number of dealers from surrounding towns and cities, particularly the small dealer from what may be termed agricultural districts. Many of these and other dealers await the Boston show before taking on an agency, preferring to meet the factory representatives and to obtain first-hand information as to deliveries, service and the organization behind the truck. Judging from the interest manifested by these prospective dealers there is a large and profitable market awaiting development. This is particularly true of the dealer located in small towns and in close proximity to the farming

#### Tractor Exhibits Draw Crowds

That the 1919 Boston truck show will see tractors featured is very evident. Three makes, the Avery, Beeman Garden and the

Case, were exhibited this year, and these were surrounded by interested crowds which included many dealers. Those exhibiting tractors were enthusiastically optimistic and predicted that the tractor exhibits would be one of the features of next vear's event.

One of the striking features of the show was the large number of attachments or units for converting the passenger car into a truck. There were 12 different makes represented and 18 models shown. While the majority of the units are for converting the Ford into a commercial car, there were several of the universal types, those used for attachment to standard makes of passenger cars. Not only were there many chassis shown, but there was a large number of different body types, these ranging from the ordinary panel delivery to the dumping design. A number of special body designs were featured and in many instances these were striking in appearance. One new attachment made its appearance, the Amesbury, which is described elsewhere. An attachment attracting considerable attention, despite the fact that it is for use in winter only and is for service where deep snow is encountered, was shown on a Ford.

## List of Exhibitors

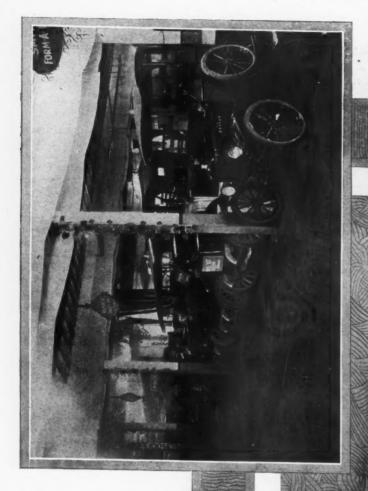
	Mod
Acason	2
Atlas	2
Autocar	6
Atlantic Electric	1
*Amesbury	1
Brockway	1
Bethlehem	1
*Columbia	
Chevrolet	1 2
Couple Gear Electric	1
*Comdelcar	2
Dodge	ĩ
Diamond T	
Denby	
Day-Elder	2
*Dearborn	1
Duplex Four Wheel Drive	
Federal	3
Ford	
Fulton	
*Guaranty	2
G. M. C.	
G. V. C. Electric	
Hurlburt	
Hunt Electric	
Hercules Indiana	1
International Harvester	. 3
Koehler	
Kelly-Springfield	
Mack	
Maxim	
*Maxfer	
Maxwell	
Nash	. 3
Netco	. 1
*Oxford	
Pierce-Arrow	
*Phoenix	
Packard	
Republic	
Reo	
*Smith Form-A-Truck	
Sterling	
Stewart	
Sanford	
Signal	
*Truxtun	
*Tonford	
Vim	. 1
Velie	
Wilson	
White	
*Will-Holt	. 2
* Truck attachments, i. e., units.	

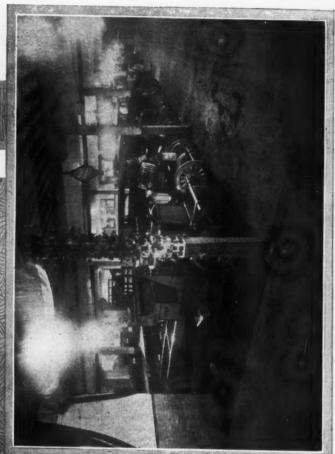
## **Bodies Shown in Great Variety**

The versatility of the commercial car industry was reflected by the wide variety of chassis and bodies shown, these ranging from the motorcycle package delivery car to the 7-ton truck. Practically every industry of note was represented by bodies, many of which were special, and a large number bore the names of the concerns purchasing the equipment. One company made a large display of fire apparatus and special body designs. This exhibit included a chassis equipped with wheels for service in mining regions where ordinary wheels fail to provide the essential trac-

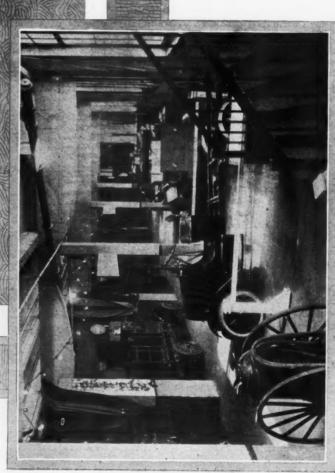
There was a total of fifty-six makes of commercial cars, of which number four were electrics. Of the fifty-two makes of gasoline cars, twelve were the attachments or units. Exclusive of the motorcycle delivery cars, snow attachment and a special body mounted on a passenger chassis, there was a total of 130 chassis displayed. Two different makes of trailers were shown, i. e., the Miami in one model, and the Troy

Several companies had very comprehensive exhibits, showing as they did a variety of chassis of varying capacity, also special body designs. These included the White, Pierce-Arrow, Packard, G. M. C., Autocar and Republic. The majority of exhibitors showed two different chassis. Two types of commercial car wheels comprised the accessory and equipment exhibits.









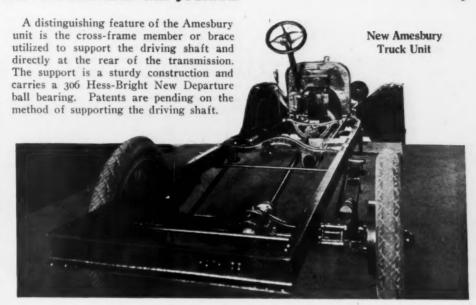
The Upper Left Illustration Shows What Was Exhibited in the Line of Tractors Views of the Boston Truck Show.

## Amesbury Truck Unit—New Attachment for Fords

A new attachment or unit for converting the Ford passenger car into a commercial vehicle has been brought out by the Wentworth Body Co., Amesbury, Mass. It is the design of Clarence Hogeboom, the engineer of the company, and the unit takes the name of the town in which it is constructed.

It is a 1½-ton unit having a wheelbase of 128 in. and affords a loading space of 9 ft. in back of the driver's seat. The Amesbury unit is sturdily constructed throughout, and its substantial appearance is obtained by the use of components of ample size. The frame, which is 13 ft. 8 in. long and 34 in. wide, is of 4-in. channel section, 3-16 in. thick. It is secured to the Ford frame by four heavy gusset plates, two at either side, and each plate is retained by four rivets and four bolts. The frame is also braced by gusset plates at the rear, top and bottom. The running boards and hangers are attached.

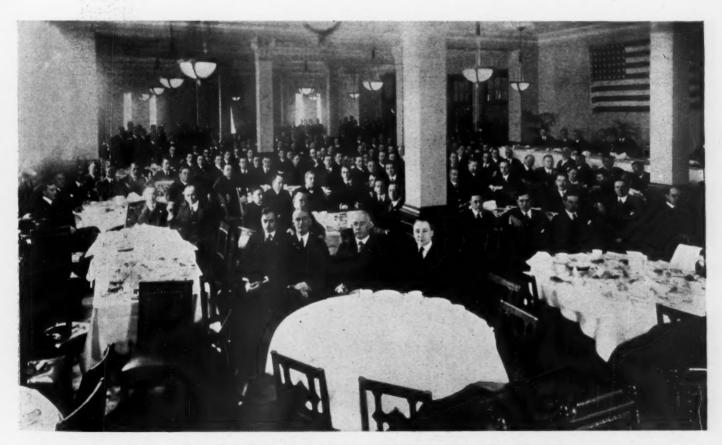
The rear axle is a full capacity Torbensen, internal gear drive, and drive from the Ford transmission is through a 2-in. tubular shaft having a Kinsler-Bennett universal joint at either end. Instead of a square shaft a splined member is utilized at the forward end of the drive shaft, a construction held to avoid the possibility of play in the shaft.



The springs employed are of the semielliptic type, 49 in. long,  $2\frac{1}{2}$  in. wide, and have 12 leaves. They are shackled to the frame. Drive is through two substantial radius rods. The emergency brakes, internal expanding, which have a face of  $2\frac{1}{4}$ in., are connected with the hand lever by wire cable, and the wheels are of wood with quick detachable, quick demountable rims, when pneumatics are supplied. The tires are single, solid,  $34 \times 4\frac{1}{2}$  in. Pneumatics are supplied at \$30 extra.

Although the wheels were shown in natural wood finish, the standard color will be dark green. The claim is made that 90 per cent of the load is carried on the rear axle, which has a gear ratio of  $6\frac{1}{2}$  to 1. The Jackson Motor Car Co., Boston, has been appointed sole distributor by the Wentworth Body Co., the maker, and deliveries began March 1. The Amesbury unit equipped with solid tires lists at \$395.

The company is prepared to supply a wide variety of bodies.



Boston Auto Dealers' "Pep" Luncheon Held During Boston Show Week

The meeting was for the purpose of organizing and obtaining members for the New England Automobile Board of Trade. This is to be a co-operative body of automobile and truck dealers, with a yearly membership of ten dollars, with temporary headquarters at 5 Park Square, Boston. E. LeRoy Pelletier and Albert Reeves were the principal speakers. Mr. Charles F. Coe, temporary chairman, spoke of the need of such an organization and the work that could be done in combatting adverse legislation



## SNOW, BEAUTIFUL SNOW!



## Motor Trucks Keep State Highways Open and Rid Cities of Winter's Plague

A Resumé of What Has Been Accomplished by Commercial Cars in Fighting the Snow Problem in Many Parts of the Country During the Past Two Months

By H. K. LANSING

NOW and ice are not the handicap they used to be to traffic and industry-for which thank the motor While congestion on the truck. railroad lines is increased and teams are "eating their heads off" in stables, the busy commercial car is pushing its way through drifts and over glazed thoroughfares, delivering the goods in every sense of the phrase and becoming more than ever a money-earning factor for the business man. This winter especially, with its unusually plentiful snowfalls, has presented obstacles which have been met and surmounted by the motor truck in a manner so efficient and convincing as to have turned the test into an advertisement beyond even the ability of the most resourceful of publicity men to conjure up.

Interurban motor expresses have "come through" with amazing success.

The motor mail service has followed schedules surprisingly.

Farmers in remote districts have moved their threshing machines on motor trucks from one locality to another with comparative ease.

Railroad hauls have been supplemented, and in some cases supplanted.

Procession after procession of trucks has threaded its way across vast stretches of territory from factory to sales agent under self-power because of freight congestion on steam roads. And city delivery systems hardly have hesitated.

### Not All Easy Going

These successes, however, have not been attained without a struggle. In numerous instances there have been stress and strain. Cars of various types have been stalled at drifted points. Some have had to turn back and it is only fair to the man with the shovel on the highway, the big motor car scrapers and the kindly disposed farmer to acknowledge that, in some cases, without their beneficent agency trucks and truck trains would have been much later at their destinations. While the significant fact is that the truck has triumphed, the monotony of its success has been interestingly broken and out of some of these difficulties new ways of coping with emergencies have arisen.

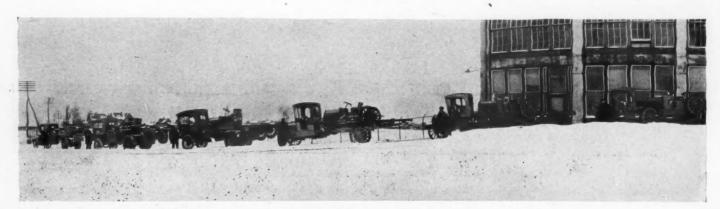
#### Praise State Highway Department

The State of Pennsylvania has been the setting of many of the scenes of victory for the motorized vehicle this winter and, of course, a certain number of its defeats have been staged along its highways; but the majority of men who drove either truck or passenger car over the Lincoln Highway, when interviewed by the writer, had only sincere praise for the

efficient manner in which the State Highway Department kept the big artery open to traffic in the teeth of the fiercest storms and when virtually all other avenues of transportation were crippled. When the "end-chain" of Liberty truck trains, from Detroit to the seaboard, struck the trail through Pennsylvania, the progress has been, for the most part, as steady as a caravan's, despite storm and windrowing

Another instance of the smoother successes through Pennsylvania began as a desperate battle in Ohio. Starting in an exceptionally heavy snow from the factory in Lima, an overland train of Garford trucks early in January made the trip through Pittsburgh and Philadelphia to New York.

The object—the "drive," by the way, is being continued with trains of varying units—was to make deliveries of orders under the trucks' own power, because railroad congestion was so great that freight cars generally were not available for conveying shipments, and even when they were, so much time was required to reach destination that the advantage lay all in favor of driving over the road. Each driver, except in a single instance, operated a truck on which another truck was loaded. For the first 100 miles on the way out from Lima, the truck train literally was obliged



to fight its way without a let-up. Where the snow had drifted high, recourse was had to shoveling, but as there were nearly 40 men for the work on 37 cars, headway was made rapidly. Considering the difficulties encountered, the train made very good time. While it took five days, because of the shoveling operations, to negotiate the first 100 miles, the following 200 miles was accomplished in about four days, while the trip from Pittsburgh to Philadelphia occupied about five.

Prior to that time, with snow on the ground, but not heavily drifted, a Garford truck train of five-ton trucks had been run from Lima to Philadelphia, a distance of 540 miles, in only eight days. The run in the heavy snow was not experimental. Since that time four or five more trains have gone over the same route and with less snow of course much quicker time was made. As only three trucks can be shipped in a freight car, the arrival at destination of a large fleet means much to those who place an order and it is for this reason that many motor truck concerns are

using self-power for deliveries. All trucks going from the Garford factory to Philadelphia and Pittsburgh are traveling in this fashion. If such method may seem costly to the casual observer, how about the cost of obtaining—when possible at all—an entire freight car?

An example of cleverness in getting out of a predicament in the snow during the stormy period was shown by Edward D. Eagan, a chauffeur for George I. Oberholtzer, a trucking contractor with offices

at 2629 North Reese St. On Sunday, February 3d, Eagan, with a helper, started from Philadelphia with a five-ton Pierce-Arrow truck hauling two steel castings—huge wind shields for shells—weighing 6800 lb. apiece, consigned to Harrison, N. J. On the Lincoln Highway between Langhorne and Trenton, while about to cross a viaduct the approach to which has sheer banks, the snow was so deep and soft in the roadway that the wheels refused to take hold and the rear of the car with the

take hold and the rear of the car with the end of the rope l

Making an Irresistible Drive on the Snow

A five-ton White, snapped in the act of forcing its way through the snow, clearing a road from Philadelphia to New York

huge castings aboard, as the chauffeur tried to urge it on, slewed toward the nearest steep bank. Eagan and his helper puzzled and pushed. His big rear wheel chains couldn't grip the squdgy snow and the power, with the mountain of castings in the truck, wasn't getting them anywhere. Some sympathetic farmers emptied a barrel of ashes under the truck's wheels, but there was nothing doing. Then Eagan remembered that he had in his truck a blockand-fall, an ordinary four-rope and pulley

contrivance for hoisting, which he intended using in unloading his castings.

Leaving the farmers staring, Eagan ran to a lone tree by the roadside, fortunately for him a short distance from his car. He quickly girdled the tree trunk with a short bit of rope, slipped the pulley hook into it and dashed back to the truck. He reached beneath and tied another short bit of rope around the front axle, into which rope he slipped the second pulley hook. The loose end of the rope he carried to the rear

wheel of the truck nearest the bank, passed it securely around the deep groove in the double wheel and also tied a separate piece of rope, not connected with the block-andfall, first to the casting and then to a point higher up on the tree trunk than the first girdle. Then he let the car have plenty of power.

The casting was so heavy that no amount of tugging on the rope, in case the truck, in straining on the block-andfall ropes should slip back, would move it. and it served as insurance against the truck slipping down embankment the should the pulley ropes give way. The latter, with the ma-

chine's own power, were both pulling in front and, so to speak, pushing behind, where the end went around the groove in the rear off-wheel. In a short time Eagan and his helper were on their way.

Between Belleview and Monroeville, O., according to drivers of the train which reached Philadelphia the third week in February, 48 big trucks for the army ambulance corps, en route under their own power from Pontiac, Mich., to the Quaker City, being part of a consignment from the Gen-



They Made the Run From Lima, Ohio, to Philadelphia, 540 Miles, in Eight Days

eral Motors Co., were able to make but eight miles in one entire day, on account of the huge drifts. As in the case of the Garford train previously mentioned, each truck bore another, and as no lights were carried, they did not travel at night. In the drifts between Belleview and Monroeville the big cars stuck for a time, at last resorting successfully to the expedient of pulling one another out. The cars were of various

capacities—from three-fourths of a ton to five tons, so the sight was a novel one. There were 25 men in the train, in charge of M. K. Crandall, assistant superintendent, from the Pontiac office. At York the cars parked for the night on Penn Common. Owing to the snow blockades, the train took three weeks to go 540 miles. The distance of 76 miles, from McConnellsburg to New York was made in a day.

A comedy of the winter road, interspersed with somewhat tragic moments, in which both motor trucks and passenger cars were involved, is graphically described by one of the principals, Frederick Phillips, of Villa Nova, well known to Philadelphia motorists and who drives a seven-passenger touring car—a Cole 8. The "cast"

—a Cole 8. The "cast includes two five-ton trucks, known on the road re-

land and there is a steep incline on the side of the mountain that must be close to 500 ft. There are no rails or fencing around this flat top. Brick is laid on the top of the hill road which is about 40 ft. wide and I noticed that there were deep ruts in the ice and snow caused by heavy vehicles.

"I had gone about half a mile down the hill road, when my car, which has a heavy "On my return trip from Akron, four miles from Ligonier, at the bottom of the mountains, I overtook the two well-known five-ton trucks of the Goodyear Tire and Rubber Co., 'Mr. Mack' and 'John Packard' as they are familiarly called. They spend a good deal of time on the road, but they spent more this time. They were on their way to New York and Boston with a load for Government purposes and or-

dinarily they make their run in seven days. There they were, with the snow ten feet deep, all around them and a line-up of ten other motor vehicles. Each Goodyear truck carried two men, the scheme being for one to sleep in the specially constructed Pullman room, or berth, behind the driver, while his companion piloted the car. They were having a great time 'joshing' one another, as there is strong rivalry between

Jamming Through a Path After a Heavy Fall

the cars. They
told me that they had
experienced no tire-bursting and that in spite of the
drifts, they had changed tires
but once on two wheels and that
they had no valve trouble. Until
the snow got too deep, their big
rear-wheel chains had performed well. They had telephoned
into Washington about the almost impassable drifts and were

instructed to push on and deliver the goods, if they had to call out an army of shovelers to help them. The State Highway department had sent twenty-five men and dug for them for three days, farmers assisting without compensation, some working all night on the job. Motorists certainly have got to hand it to the State Highway Department and the farmers.

At McConnellsburg, the other side of the mountains, a gang of twenty men dug through the drifts. Through 180 miles of mountains the highway workers finally cleared a path. I was only stalled there near Ligonier for four hours and the Goodyear trucks and most of the party of ten cars got away at about the same time. I was thankful that I had solid disc wheels which carved the snow and through which it could not pack. My heavy rear-wheel chains and the use of super-heated steam in the valve-heads all helped. For forty hours straight I drove on the homeward trip without closing my eyes. Despite all the shoveling and scraping, there was a foot of snow on the road. We reached Philadelphia Friday morning."



spectively as "John Packard" and "Mr. Mack," belonging to the Goodyear Tire and Rubber Co., of Akron, O.; a mercenary sailor driving a little Ford with a ton of coal, purchased in Pittsburgh, to be used as ballast on Pennsylvania's icy mountains and collateral in Philadelphia, and a "chorus" of interested bystanders, as well as bold Lincoln Highwaymen armed with shovels. There was a happy ending, the motor trucks and all the larger motor vehicles triumphing over mountain, ice and drift, the Highwaymen assisting.

Let Mr. Phillips tell it.

"I left Philadelphia," said Mr. Phillips, "on a Sunday, at noon, en route to Akron. It had snowed first, then came an ice storm which glazed the roadways and later there was a blizzard. From Greensburg to Pittsburgh children were skating right in the roadway. Along the full 28 miles there was a solid glare of ice and scraping had made it even glassier. On the summit of Turtle Creek Hill a road two and a half miles long curls around a sort of table

rear end, skidded, turned around several times on the glazed trail and stopped dangerously near the side brink. I could see at the bottom of the hill the carcass of a big touring car collapsed against a telegraph pole. The sight was not a comforting one. Somebody, at least, had made the descent-after a fashion. No one was near, but there were houses on the hillside. got out and went to one of them and called up several garages before I found a party, who agreed to send a man with a rope. After a wait—the garage was near Wilmerding-two men came. It looked like a hanging party, for the rope, in a noose, dangled from a crowbar carried by the men. They tied the rope to the rear shackle bolt, carried the other end to a nearby telegraph pole, took a hitch around the pole and while I sat in the car, easing along sidewise at the curb and using the brake, my rescuers would run like mad to the next telegraph pole and repeat the hitch-and-let-her-out operation till we gained the bottom of the slope. It certainly was some traction scheme!

## Motor Trucks Help New England Conquer Severe Weather Conditions

EW England has just passed through the severest winter in its history. There have been seasons when more snow fell, but none with more ice or longer periods of below zero weather. Before Christmas time a thick coat of glare ice covered the roads and streets and not until after March 1st had this coating melted.

Through this record breaking weather motor trucks have worked without interruption. They have taken up work where transportation companies have fallen down.

They have carried life-giving relief where all other agencies failed. Their steaming radiators and their panting engines have tackled every job without failure and have impatiently a waited opening of new fields to conquer.

Motor trucks have carried freight over long hauls through deep snows when the steam railroads of New England were practically blocked by snow and ex-treme cold. Trucks have gone over the road for coal for mills and homes when vessels laden with fuel have been frozen fast in the harbors and bays. Trucks have delivered fuel after horses had fallen from exhaustion. They have

pulled stalled trolley cars through great drifts and opened up the roads for them; carried water to homes in which water services were frozen and to whole sections of cities where water pipes were frozen solidly in the streets. In short, motor trucks have been the pulsating life giving agency which has enabled New England to conquer the greatest obstacles ever placed before it in any former winter.

Some idea of the weather conditions may be obtained from the statement that for sixty-three days in succession the thermometer did not once go above thirty degrees; that during this time the glass went as low as 40 deg. below zero in northern New England, while Boston's official low record was 28 deg. below zero; that there were three cold snaps when the thermometer did not go above the zero mark for a week at a time in each case; that frost was more than six feet deep in the ground from Maine to Connecticut. Picture the lakes frozen to a depth of more than three feet, the rivers so frozen that water power was

seriously curtailed and in many instances entirely cut off. Add to this picture the scarcity of coal, the sickness and suffering which these conditions brought and the delays occasioned by street railways operating on the verge of bankruptcy with service seriously curtailed and steam trains hours late even on short runs, and you will have some idea of the conditions which motor trucks tackled and in which they brought relief.

That was the dark side of New England. To offset it New England industries had

dreds of factories, carried loads of finished products out of New England and returned with loads of fuel to keep industries in operation.

When word of the Halifax disaster reached Boston, about three o'clock in the

When word of the Halifax disaster reached Boston, about three o'clock in the afternoon, and trucks were ordered aboard the relief steamer which was to sail at nine o'clock the next morning, Boston truck dealers worked through the night to complete bodies for ten motor trucks and delivered the completed trucks on the wharf an hour before the steamer sailed. They

boasted of that achievement, but that boasting was short lived. Within a few weeks such work was commonplace among them. Dealers were flooded with orders for immediate delivery for the re-lief of New England. How successful they were may be realized from the fact that registration of motor trucks in New England for the first two months of the current year more than doubles the registration during the same period a vear ago.



A Three and a Half Ton Kelley Equipped With Snow-Scraper, Breaking the Way

The plow is built by the American Good Roads Machinery Company, of Kennett Square, Pa. It is
raised or lowered by the wheel arrangement shown

millions of dollars worth of rush contracts which would have kept the factories running night and day had power been available. Wages were at the highest level ever known. Manufacturers were, and still are, spending thousands of dollars advertising for help, which is not obtainable. It was not a question of having sufficient money with which to do things. New England had more money than ever. It was a case of money being unable to buy relief.

## Truck Dealers Rushed With Orders

There was just one agency which afforded relief and returned dollar for dollar for the money expended. That was the motor truck. Never has the demand for trucks been greater. Never were the truck dealers so rushed with orders for immediate deliveries as during this season. For trucks went everywhere, did anything and everything that was demanded of them and kept the home fires burning in thousands of homes, kept the motors running in hun-

## Where Horses Failed Absolutely

In the city of Providence, R. I., coal dealers were unable to carry fuel up some of the steep

grades on account of ice on the streets for a period of more than a month. Trucks negotiated the incline and delivered fuel.

With the shortage of coal came an immediate demand for wood. Deliveries by railroad freight were uncertain. Trucks went to the rescue. They went into the woods over the roughest kinds of roads. They hauled their loads direct to the doors of the consumers. In the Maine woods a lumberman took a five-ton Republic truck into the woods, loaded it with two cords of wood, hitched 15 sleds in a row behind it and carried a total of 15 cords of wood into Bangor each trip. There were no steep grades over the route and the work was done with comparative ease.

With glare ice underneath and a light snow covering it, making one of the most dreaded of all roadbeds for winter motorists, a three and a half ton Duplex negotiated the steep, winding grade of Black Rock Hill between Plymouth and Sagamore, Mass., with a capacity load and a two and a half ton capacity-loaded trailer behind it. This outfit belonged to A. C. Banks, made the 16-mile run in four and a half hours over the glare ice, carried twice the load that a four-horse hitch had taken in less than half the time of the horses. In other words, the truck and trailer did the work of eight horses in a quarter of the time required by the horses.

R. R. Rowell, of Haverhill, Mass., operated his Duplex every working day through the winter with a six-ton load of leather board. The George E. Keith Co., of Brockton, Mass., with their Duplex truck and Troy trailer, operated throughout the winter in its usual work of carrying lumber and boxes between the sawmill and the factory besides making frequent trips from Brockton to Boston for delivery of finished goods.

Fifty-four Republic trucks operated by the Standard Oil Co., in New England territory, didn't miss a day during the winter. Owing to the fuel scarcity, this company's work was greatly increased and even the most out-of-the-way places were visited without difficulty. Youlden, Smith & Hopkins, Boston trucking concern, used motor trucks for long distance hauls and their Republics, Packards and Pierce Arrow trucks went through without trouble.

At the Bath (Me.) Iron Works a Packard truck operated daily throughout the winter hauling coal through the deepest snows. But for the work of this truck serious curtailment of operations, because of shortage of fuel, would undoubtedly have resulted. J. J. Harmon, of Westbrook, Me., operated Packards on his express line between Portland and Westbrook, taking in many smaller towns nearby, without losing a day through the winter weather. Armstrong Transfer Co., at Portland, operated its Packards throughout the winter, while Packards, Signals, Vims, Nash, Kelly-Springfield and other trucks were sent through the Maine storms, some going to Boston, when even the railroads were seriously delayed and at times completely blocked

During the coldest weather, when ice coated all roads, a Federal truck of three and a half tons capacity, loaded with 7600 lb. of ink from the George H. Morrell Co.,

of Norwood, Mass., went through to New York city without the use of chains, going via Providence and the so-called lower road. The start was made with the thermometer registering 18 deg. below zero.

Through the severe weather the question of getting supplies to the Liberty plant for the government at Squantum and supplies to the cantonment at Ayer, Mass., might have been quite a problem but for the work of Vim trucks in the former instance and Mack trucks in the latter.

Between Boston and Franklin, N. H., Thomas J. Jaffney, of the latter city, has opened an express line of trucks and this is in daily operation. From Bangor, Me., to Boston, an express line has been operated through the winter. The Boston to New York motor trucking business has increased rapidly.

Weather conditions of the most wretched character have been unable to lessen the work of the motor trucks. Such conditions have but proven the stability of the truck as an all-year, indispensable part of the equipment of industry, limited only to the supply of trucks obtainable.







## Conquering Blizzard Conditions in Chicago

By GEORGE BROWN

HIS story, while a record of facts that are probably well known, is to record the conditions, which were successfully met by motor trucks, under unprecedented difficulties in one of the greatest centers of civilization.

Chicago is noted for the big things it does, usually through good judgment, but with all promptness and that factor of the world—those interested in transportation problems—are asked to believe that the storm facts presented here, both in type and pictorially, were unpremeditated on Chicago's part. It was an accident pure and simple—a tremendous and stupendous novelty—and Chicago is not going to do it again.

The snow-fall at the end of the first 24 hours measured 13½ in. on the level and a wind velocity of from 44 to 60 miles an hour helped to present the aspect of white mountains and bare pavements, while the temperature ranged from 12 to 25 deg. above zero. There was a practically complete railroad tie-up. While the snow fell and the storm continued, prudence compelled a curtailment of motor truck, automobile and taxi cab service to the business district as the result of impassible streets.

Telegraph and long distance telephone communication was completely interrupted. The force of the blizzard drove the Street Department workers from their activities. Over one-half of the city's street lighting service was put out of commission. Hundreds of automobiles were stalled on the boulevards, many abandoned. The Street Department, with appropriations limited and utterly unable to cope with the blizzard, and even before the intensity of the cold and the wind velocity had perceptibly diminished, pressed a Gram motor truck into service as a snowplow and rendered efficient service particularly to the Park Department in opening avenues between the snow banks for necessary traffic.

#### Snow Banks Twelve Feet High

The record of motor trucks, that is, the vehicles for service under the strenuous conditions, was practically 100 per cent perfect, as the fall-down—what little there was of it—was beyond the human endurance of the drivers and their assistants.

One of the illustrations shows the conditions as they were on the Michigan Boulevard. Michigan Boulevard is immediately south of the Blackstone Hotel, within the

space of two city blocks. While automobiles were struggling their way over the wind-swept path, four motor trucks were loading snow and hauling it away to the dump. The passer-by on the sidewalk was now and then able to catch a glimpse of the snow being loaded, as it was thrown from the shovel into the body of the trucks. These huge snow banks, in some places 10 to 12 ft. high and varying in width from 25 to 50 ft., were scarcely interrupted at the intersecting streets, and yet under these almost insurmountable obstacles motor trucks were the prominent factor in digging Chicago out of the snow on the main thoroughfares.

Partial relief to the railroad tie-up, more particularly to the Naval Station, Great Lakes and the army at Fort Sheridan, was furnished by motor trucks which managed to negotiate the snow drifts and carry stranded sailors and soldiers back to their duties.

## Practical Education for Motor Truck Prospects

This is really the first instance in the history of the motor truck industry where the physical conditions in a great city were



Chicago's Great Lake-Front Drive, Michigan Boulevard, Buried by the Blizzard

such as have been related. The successful negotiation of this formidable traffic interference has been exceedingly gratifying to investors in commercial cars, as well as practically educational to those contemplating profitable improvement in their haulage equipment. A vivid imagination (if practical operators in haulage or teaming are afflicted with such) is unnecessary to understand conditions existing in this city for weeks, when the limit of street width on the main thoroughfares was confined to the two narrow lanes of the surface-street car lines bounded by huge continuous snow banks from the sidewalk close to both outer tracks. Speed, of course, was impossible and the difficulties of traction were overcome, in some instances, by drivers carrying a box of sand or ashes to use to secure traction on the slippery conditions under the wheels. Burlaps and chains also did their part to keep the motor trucks moving. Every intelligent driver carried his shovel and motor trucks invariably made their way under their own power.

## The Horse Had a Vacation

As a contrast to this record, in the month of January, according to H. L. Roberts, superintendent of the Anti-Cruelty Association, eighty-six (86) horses were shot because of injuries sustained when falling on the slippery surfaces and 368 more were ordered off duty from exhaustion. horse calamity record is undoubtedly small when taking into consideration the number of horses employed in the city's traffic, but the wise employer of equines kept them in their stalls on vacation, preferring to pay the present high cost of feed rather than risk their lives under the critical traffic conditions. At all events there is a notable diminution of horse flesh for traffic as well as an increase of power for the same purposes.

Motor truck efficiency was demonstrated in the delivery of coal, as they hauled the snow away from the team tracks to make roads to haul coal to industries, business and homes. The relief here, alone, was on a stupenduous scale. The fire peril was lessened as motorization of fire apparatus has made wonderful progress in the Chicago Fire Department, but the motor truck

itself was an additional advantage when fire hydrants were buried under several feet of snow, maybe great drifts, and the only way to uncover them was to load the snow on the trucks and haul it to the dump.

A peculiar feature of this most remarkable snow traffic disturbance was the superiority for traffic movement in the "Loop" over other "lanes" in Chicago. Immediately after both blizzards prompt measures were taken by the City for snow removal from there, hence with wider street action

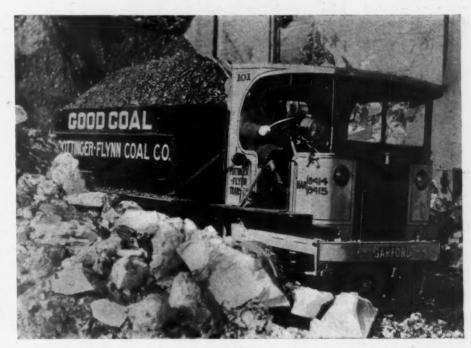
'Loop.'" There was some wind with that blizzard, although it may prove to be an "ill wind which has blown some good," as many minds of those powerful in haulage interests are likely to be more open to conviction of the efficiency of commercial cars in the present and future.

## Connecticut Forced to [Keep Roads Open

The law requiring of the Connecticut Highway Commission to keep the State roads open at all times of the year have had the result of making possible shipments over the road of numerous supplies for our own and allied governments, that could not possibly have been sent out by rail under the conditions existing this winter.

One of the most important stretches of highway is the Boston Post Road, running from New York through Bridgeport and New Haven. This stretch of road is under the care of R. M. Donnelly, Commissioner of Repairs. How well he has done his work may be known from the fact that despite the heavy snow fall of December and January, the state road has been continuously open full width for every kind of service up to the heaviest hauling. Mr. Donnelly's supervision extends over 75 miles of state highway.

To do this clearing Mr. Donnelly uses four motor trucks which are equipped with adjustable snow plows.



A Garford Six-Ton Truck Loaded With Coal on Its Way Between Snow Banks From the Team Tracks of the Chicago Junction Railroad

the "Loop" for one period of its existence offered a better opportunity for the motor truck movement than over any other part of the city.

A heavy preponderance of the ranks of Chicago motor truck salesmen have "fallen down" on many an alluring prospect among the steadily diminishing disorganization called the "unconverted," when the question of "time saving" through motor truck operation is brought forward in the argument as they say, "Power has no advantage in the

It is surprising to learn what a large effect the hills have on the cost of this work. Near the city of Bridgeport where the country is flat and the hills are few, the cost is \$7.50 per mile. When operating on the hills in and near Greenwich the cost is between \$30 and \$40 per mile.

It has been proven that this method of clearing the state highways is a complete success and that it is the cheapest method yet discovered of dealing with the snow problem.

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## Brooklyn Show Discloses Many Special Bodies

Enjoying the distinction of being the only show devoted exclusively to motor trucks, Brooklyn's annual show, held March 5-9 inclusive, exceeded last year's event in the number of makes and models exhibited and in the business transacted. There were 50 different makes of commercial vehicles, ranging from the motorcycle package delivery type to the 5-ton truck. Eliminating the attachments or units for converting passenger cars into commercial vehicles, and the motorcycles, there were 10 more makes of trucks exhibited than there were last year. Approximately 142 models were shown.

While many chassis were displayed, the show was noticeable for the large number of special bodies shown, and many of these reflected the character of the transportation problems being solved by manufacturers in and around New York. This was particularly true of those concerns engaged in the manufacture of war material. An indication of the future possibilities of trade with South America was a passenger body on lines similar to those utilized by the well known Fifth avenue motor buses in New York City.

Manhattan dealers were present in large numbers and several had comprehensive exhibits. In the matter of accessories, Brooklyn exceeded Boston.

#### New Commercial Cars Revealed

A new 1½-ton commercial car, known as the Triangle A, made its debut at the Brooklyn Show. Its make-up includes component parts of well-known makers. The company producing it is the Triangle Motor Truck Co., of St. Johns, Mich.

## Sheldon Entertains and Gives Instructive Talks to Dealers During Boston Show

At the Copley-Plaza Hotel, on Thursday, March 7th, the Sheldon Axle Co. gave an entertainment and buffet luncheon to a large number of dealers handling trucks equipped with Sheldon axles. Sales manager, F. L. Martin, gave an instructive talk, illustrated by lantern slides, on the features and method of manufacture, etc.,

of the axles, so that dealers might speak intelligently of the mechanical points of superiority. A pamphlet was also distributed to further the same end. Richard Schaaf, spring engineer of the company, gave a similar talk on the spring construction.

After the luncheon an open session was held, in which Mr. Martin and Mr. Schaaf were assisted by the eastern representative, J. A. Young, in answering questions of the dealers.

## Gear Makers Will Meet

The American Gear Manufacturers' Association will discuss the subject of "Gear Standardization," at its second annual convention, to be held April 18-20, at Green Brier Hotel, White Sulphur Springs, W. Va. The association has recently become a member of the United States Chamber of Commerce, and a representative of that body will address the members at one of the meetings. Papers on such timely subjects as "Hardening and Heat Treating of Gears," "Hobs and Hobbing Machines," and "Uniform Cost Accounting," will also be presented. The program also includes committee meetings, an informal banquet and other forms of entertainment.



The Brooklyn Commercial Car Show Viewed From the Gallery of the Twenty-Third Regiment Armory

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## Indianapolis Outdoes Itself in Automotive Show

By CHESTER S. RICKER

OR the first time Indianapolis obtained a show building commensurate with the size of the city and its importance in the industry both as a manufacturing, in which it is second, and a distributing center. The building that housed the show is the new factory of the Diamond Chain and Manufacturing Co., which was recently completed and which, due to the co-operative spirit shown by Mr. L. M. Wainwright, that company's president, was not equipped with machinery as soon as it was finished, but was held open to the Indiana Auto Trade Association for the purpose of housing this show fully two weeks more than necessary. That is an example of the spirit which was found throughout the show, both among the manufacturers and the dealers.

Not only were the decorations of the show tastefully arranged, but the street approaching the show building from the center of the city, a distance of but five blocks, was draped with lights and at the entrance of the street an artistic arch of electric lights with the words Automobile Show was arranged. Inside, the decorations were appropriate to the formal design of the building. The name plates were placed on each of the columns which were spaced twenty feet apart and above them were arranged the flags of the allied nations. The entire building was well lighted naturally, so that no artificial illumination was necessary during the day time and the cars showed up to good advantage. The building is 460 ft. long and 60 ft. wide and each of the exhibitors had ample space to show his cars without crowding. Since the columns are equi-distances across the building there was a twenty foot aisleway between the booths that lined the sides of the building. This gave ideal exhibition pos-

Tractors, trucks and passenger cars were exhibited. In all there were three floors of the building taken by the show and of this the main floor was given over to the trucks and tractors, while the upper ones had the passenger cars and accessories. Eighty-two thousand square feet were devoted to the show, of which 47,000 were for passenger cars, 15,000 for tractors and 12,000 for trucks, the remaining 8000 being devoted to the accessories. There were in all 56 passenger car exhibitors, 24 trucks and 13 tractors. In the accessory department were 34 exhibitors.

#### Indiana Dealers Optimistic

Among the different dealers a spirit of optimism prevailed that bodes well for the coming year.

The weather had just moderated in that section of the country for the first time in four months and the crowd at the show on Monday, the opening night, surprised the old timers, because it was fully twenty per cent larger than on the same night last year. Further, the dealers reported more real buying and more prospects than ever before.

Almost all the dealers, however, had a hard time getting enough cars due to transportation conditions. Many of the exhibitors drove the trucks overland to get to the show on time. Also, in this section of the country much of the delivery and transportation of automobiles and trucks is overland, the trucks often carrying an auto on a long run over the road from the factory. That is how the freight car shortage is being circumvented. Trains of trucks are being run with regular crews who are familiar with road conditions.

Few people realize what a distributing center Indianapolis really is. It has the largest of the Overland distributors, the Gibson Auto Co. The Ford assembling branch, which only supplies eighty counties, is the sixth in size of all the Ford branches. The Losey-Nash Co. sells the Nash trucks as far south as Atlanta, Ga. Many of the distributors have all of Indiana and part of Michigan. Others have Indiana, southern Illinois, Kentucky and Tennessee. At the least margin Indianapolis distributors cover



During the Busy Hours This Section Was Crowded With Interested Agriculturists

An opportunity was afforded those who attended the Indianapolis Show of viewing the following tractors: Atlas Junior, Avery Oil Pull, Case, Cleveland, E-B, Heider, Mogul, Moline Universal, Parrett Titan and Whitney. The Smith Form-a-Tractor and the Staude Mak-a-Tractor also had exhibits.

As a result of the satisfaction resulting from this overland driving, both in the number of cars delivered and the general satisfaction to the user for their being well limbered up, the dealers have learned that a truck will stand up to winter work. even such a winter as the last one has been, and have more confidence in their product. This is presenting itself in the form of a tentative organization that is being made up by the Indiana Auto Trade Association, with a view to forming a chain of auto deliveries over the whole state of Indiana. This finds itself exemplified in a new company, which was formed at Indianapolis on February 25th, the Intercommunities Transfers Terminal Co. The company has a capital of \$50,000 and is to be the nucleus of an automobile truck route system which will operate between Indianapolis and towns within a radius of fifty miles. Twenty-two routes are planned and ten trucks will be in operation about the 15th of April.

a radius of 200 miles and a territory of at least 150,000 square miles. According to the Ford statistics of this territory there are over 4,000,000 people.

### Interest in Trucks Strong

Great interest was shown in the trucks, particularly in the four-wheel drive Nash, which is a duplicate of that used in the army. The trucks in fact received as much attention as the passenger cars, for even the old dealers who were accustomed to go to Chicago found it a novelty to view trucks and passenger cars at the same time.

#### **Tractors Create Interest**

The greatest interest was shown by the rural visitors in the tractor exhibits. It is interesting to note that all of the tractors, except the Cleveland, are handled by some of the local farm implement firms instead of by the automobile men. However, through the co-operation of the I. A. T. A.

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with the tractor firms, it is entirely possible that the auto dealer will be a far greater factor in this field than at the present time. At least that is the opinion of the officers of the association.

## Good, Strong Association

The Indianapolis Show was managed by the Indiana Auto Trade Association and the systematic way in which the whole show was handled this year and the effective manufacture of tractors and their demonstration in actual use on the farm. Also, Kelly-Springfield and Firestone both furnished reels showing the manufacture and care of tires. For the public and particularly the county commissioner there was a very complete set of films on road building. One set was on cement raods and another on asphalt. The latter also showed the source of supply for the asphalt and its preparation for the road.



Scene on the Truck Floor, in the Early Morning, Just After the Show Opened

Among the trucks exhibited were the Autocar, Acme, Armleder, Dearborn, Dart, Diamond T, Federal, Ford, GMC, Gramm-Bernstein, International, Master, Maxwell, Nash, Packard, Pierce-Arrow, Reo, Republic, Service, Stewart, Studebaker and United States. The Graham Brothers and Mak-a-Motor Truck attachments were also shown.

publicity done by the management is due to the efficient officers who were put in charge of it. The new president of the Association is E. W. Steinhart. R. V. Law is vice president, A. W. Hutchinson, secretary, and A. H. Smith, treasurer. The Show Committee was under the supervision of Mr. Law and he was ably assisted by Messrs. J. M. Bloch, Ellis Hunter and Mr. Smith.

The plan of publicity was to have every dealer in the entire state carry show advertising with all his copy that was run in the newspapers and elsewhere for the past few weeks. This certainly had its effect, for the first night's crowd, not counting complimentary ticket holders, was 20 per cent larger than on any previous year.

#### Movies for Educational Work

A free moving picture show was run in a dark room located at one side of the accessory exhibits and seating a couple of hundred guests. These pictures were run all day and a schedule of the reels and the time at which they were to be shown was posted so that if anyone wished to see only a particular film they knew when to return. This was quite necessary as there were 12,000 feet of film shown. The subjects were variegated but very interesting to all motor vehical users. For example, there were pictures showing the building of motor cars and trucks, the

## Horses Transported by Motor Truck

It must have been sad news to the race horses of New England to receive word that the owners had decided to transport them during the coming racing season in motor trucks. Horses and trucks have been fighting it out year by year with the trucks gradually gaining ground, but this decision of the racing men is a kind of body blow to the thoroughbreds.

The Bay State circuit meeting will race at Windsor, Woonsocket, Worcester, Boston, South Weymouth, Mass.; Framingham, Springfield, Mass.; Salem, N. H.; Portsmouth and through western Massachusetts. The meets are from two to four days in each place and to make connections it has been decided to transport all of the fast steppers by trucks. The season will start the final week in June.

B. F. Tefft, Jr., of Arctic, R. I., was probably the first of the New England horsemen to use a motor truck instead of shipping his horses by railroad. He uses Maxwell one-ton trucks for the work. He has carried his stable all over the New England racing circuit and has cut time schedules from days to hours, and shipping costs from dollars to cents.

## To All Dealers in Tractors or Automobile Dealers Who Contemplate Handling Tractors

We have something to send of great value. It will come to you in the nature of a pleasant surprise. If you are a dealer who belongs in either class, will you kindly send us your name and address and information as to whether you are at present handling or expect in the near future to handle tractors? If the former, state the make of tractor you handle; if the latter, tell us the kind and type of tractor you think you would like to handle. Address your communications to Tractor Editor, Chilton Company, Market and 49th Sts., Philadelphia.

## Government Truck Contracts to be Made Public

Government truck contracts made exclusively for the War Department are to be listed for publication, according to a recent decision of Secretary of War Newton D. Baker. This ruling does not include the \$600,000,000 worth of orders placed through the Automobile Industries Committee, nor any of the contracts for vehicles for naval bases. It is probable, however, that all contract facts, such as the prices paid for the various jobs, will not be available for publication for some time.

Following is a complete list of truck makers who have received Government orders for army supplies up to the present time:

Bethlehem Motors Corp., Allentown, Pa.
Brockway Motor Truck Co., Cortland, N. Y.
Commerce Motor Car Co., Detroit.
Denby Motor Truck Co., Detroit.
Diamond T Motor Car Co., Chicago.
Dodge Brothers, Detroit.
Federal Motor Truck Co., Detroit.
F. W. D. Auto Co., Clintonville, Wis.
Garford Motor Truck Co., Lima, O.
General Motors Co., Pontiac, Mich.
Gramm-Bernstein M. T. Co., Lima, O.
Hudson Motor Car Co., Detroit.
Indiana Truck Corp., Marlon, Ind.
International Motor Co., N. Y. City.
Kelly-Springfield M. T. Co., Springfield, O.
Kissel Motor Car Co., Hartford, Wis.
Locomobile Co. of Amer., Bridgeport, Conn.
Mitchell Motors Co., Racine, Wis.
Nash Motors Co., Kenosha, Wis.
National Motor Car & Vehicle Corp., Indianapolis.
Packard Motor Car Co., Detroit.
Pierce-Arrow Motor Car Co., Buffalo.
Premier Motor Corp., Indianapolis.
Republic Motor Truck Co., Alma, Mich.
Seden Truck Sales Co., Rochester, N. Y.
Service Motor Truck Co., Wabash, Ind.
Standard Motor Truck Co., Wabash, Ind.
Standard Motor Truck Co., Grand Rapids.
United Motors Corp., Moline, Ill.
White Motors Corp., Moline, Ill.
White Motors Co., Cleveland, O.

## Cleveland Plans Truck Show

The Cleveland Commercial Car Show Association, of which C. G. Armstrong is manager, plans to hold an exclusive motor truck show at the Central Armory from April 1 to 6, 1918. It is proposed to exhibit motor trucks, motor truck trailers and highway tractors. If this show is held according to present plans it will be the only show in the United States so far which has neither preceded nor followed a passenger car show.

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## Activities of the Motor Truck Association of Philadelphia

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## Motor Truck Praised for Work Done in War

Roy D. Chapin, of National Defense Council, Speaks at Philadelphia Truckmen's Dinner —Condition of Roads Governs Possibility of Running Motor Truck Trains

WO hundred and twenty-seven members and guests of the Motor Truck Association of Philadelphia were thrilled with patriotism at their monthly meeting and dinner at the Hotel Adelphia, on Wednesday evening, February 20, by an array of speakers, several of whom came from Washington, representing the Council of National Defense, to give the representatives of the truck industry in Philadelphia a clearer conception of the conditions confronting our country in the war and of the heavy responsibility resting upon their industry in the transportation crisis that for months has faced the nation.

The consensus of opinion of all the speakers, however, was that the motor truck industry had so far demonstrated admirably its ability to cope with the situation and gave every promise of improving the transportation conditions in the future, as economical and business-like methods were more thoroughly understood and worked out. The speakers representing the National Government were R. D. Chapin, chairman of the Highway Transportation Commission of the Council of National Defense, and George M. Graham, chairman of the Motor Truck Commission of the Council of National Defense.

R. D. Leonard, general sales manager of the Atlantic Refining Co., read a paper on "The Relation Between Gasoline and the Growth of the Automobile Industry." Mr. Leonard took an optimistic view of the gasoline production possibilities of the country to meet the extra heavy demand resulting from the growth of the industry and on account of the war.

The meeting was presided over by John D. Howley, branch manager of the White Co., and president of the association, who called attention to the fact that they had the largest attendance in the history of the association.

Mr. Chapin said the question for every American to ask himself was, "What is my part in winning the war?"

Continuing, he said: "The motor truck has come to be recognized as a vital necessity. The study of our Commission has been chiefly with the result of railway congestion and the use of highways to make up for transportation deficiencies especially

through motor truck vehicles, which will carry loads for moderate distances more economically and quickly than any other form of transportation. A Return Load Bureau has been organized in the State of Connecticut, with admirable results, and we desire to start such a bureau in Philadelphia and other parts of Pennsylvania, Massachusetts, New York, New Jersey and Maryland. David Ludlam, of the Autocar Co., and Mr. Wilson, of the Chamber of Commerce, of your city, are conferring with us now on this problem. The freight embargo placed on your city was to cut out the short freight haul by railroads and to put it upon the motor vehicle. We are trying to work out a plan to move your freight quickly. Thirty trucks a day are now leaving Detroit over the highways for eastern points carrying loads, and today another fleet started from Buffalo. I want to pay a compliment to your city and the State of Pennsylvania for setting an example to the country in keeping your roads in good condition for these motor truck trains. Your state is ahead of every other state in that respect, and we are recommending your system to other states."

Mr. Leonard, of the Atlantic Refining Co., reviewed the manner in which the crude oil business has developed, starting with the "wild catting," or experimental drilling period. There are 234 refiners in the country with a still capacity for running crude oil considerably in excess of the available production. He said that any seeming shortage in gasoline would probably be made up from the stocks of gasoline available from crude oil drawn from storage and from the yield of gasoline from Mexican crude oil, which had not been included in the figures he compiled.

George M. Graham, David Ludlam, president of the Autocar Co.; J. H. Fassitt, president of the Automobile Trade Association; A. E. Maltby, vice president of that Association; Judge Eugene C. Bonniwell, E. J. Cattell, Winsor T. White, president of the White Co., of Cleveland, and Thomas May Pierce, treasurer of the Hercules Cement Co., also spoke.

The new motor vehicle law in Connecticut provides that every automobile so constructed as to prevent the operator from having a clear view behind him, such as limousines and other enclosed types, must be equipped with a mirror giving a view of the rear. The law also applies to commercial cars with cabs, high bodies or which ordinarily carry loads which obstruct the rear view.

Herriman Mfg. Co., South Haven, Mich., has had filed against it an involuntary petition in bankruptcy.

Emerson-Brantingham Co., Rockford, Ill., is erecting a new building to be used as a stock warehouse. A new engine testing room is being fitted up with eleven engine test stands, and with these added facilities the company expects to produce 3000 machines during the coming year.

Minneapolis Steel and Machinery Co., Minneapolis, Minn., has just completed the construction of a new brick building to be used as a testing laboratory. The new building has two testing stands, one at each end of a 100-hp. Sprague electric testing dynamometer, which will permit the testing of one engine while the other is being prepared for testing.

Interstate Motor Express Co., Inc., has been organized by Harry Becker, a Baltimore accessory dealer. The company will handle freight between Baltimore, Washington, Philadelphia and York. A receiving station has been established at 521 N. Howard St., Baltimore.

Wisconsin Duplex Auto Co., Oshkosh, Wis., which will build a four wheel drive 1-ton truck. recently held a meeting of its board of directors at which the following officers were elected: W. A. Besserdich, president; H. F. Landeck, vice-president; B. A. Mosling, secretary; J. P. Mosling, treasurer.

Four Wheel Drive Auto Co., Clintonville, Wis., held recently its annual meeting of stockholders. A dividend of 50 per cent was declared, which increases the capital stock of the corporation from \$1,000,000 to \$1,500,000. The company is preparing to increase its production in order to execute a Government contract. J. D. Cotton was elected a director of the company to fill the vacancy caused by the death of John Kalmes.

Hebb Motors Co., Lincoln, Nebr., commercial body manufacturer, announces the increase of its capital stock to \$1,000,000. The company plans to erect a plant at Havelock, Nebr., and will remove there. The first factory unit will be 2 stories in height, 240 x 400 ft. The company has been preparing plans for the manufacture of a truck, and a large part of the new plant will be devoted to its production.

Barger Truck Co., Indianapolis, Ind., has been incorporated to manufacture motor trucks. The company is capitalized at \$50,000. The company announces that it will manufacture a four-wheel drive truck. Directors of the company are Henry W. Barger, Olga Barger and Walter Brevet.

## Who's Who in Washington War Work

Organization of Government Committees With Which the Automotive Industry is Concerned

## **Automobile Industries Committee** 509 Seventh Street, Washington, D. C.

A. W. Copland, chairman. Mr. Copland deals with matters connected with the supply of parts and equipment.

Hugh Chalmers. Mr. Chalmers represents the complete vehicle builders.

John R. Lee. Mr. Lee has been delegated by Henry Ford to look after the Ford company's interests in relation to the supply of war material, etc.

W. D. Rockwell is manager of the committee and any inquiry relating to the supply of raw material or factory capacity for undertaking government work should be addressed to him.

This committee is really the connecting link between the War Industries Board and the Automobile Trade and its position is such that it is in the closest possible touch with existing conditions from day to day. Any car or parts manufacturer needing information regarding government orders, etc., should communicate with Mr. Rock-

## **Highway Transport Committee**

Munsey Bldg., Washington, D. C.

Roy D. Chapin, chairman.

Geo. H. Pride. L. W. Page.

H. G. Shirley.

A. C. Hargreaves, secretary.

The primary duties of this committee are to facilitate the transport of Government war trucks from the factory to the coast by road and under their own power. These trucks are loaded with Government supplies and operated by men who thus gain experience in road transport which will be of immense value "somewhere in France" later on.

Part of the program includes the keeping of main roads in good condition irrespective of weather conditions and the full co-operation of the various State highway engineers has been requested and is being enthusiastically taken up by these officials.

It is probable that when opportunity offers this committee will take up the matter of road transport of goods from city to city, using trucks suited to the capacity of the individual load.

Inquiries on the subject of road transport or information as to local main road conditions likely to be of interest to the Government should be addressed to Mr. Hargreaves.

## The Commercial Economy Board

18th and D Sts., Washington, D. C.

A. W. Shaw, chairman, is dealing personally with the various problems of eliminating waste in all branches of trade and manufacture. From an automobile point of view he is investigating waste in garages, repair shops, service stations, etc., and he is also interested in truck delivery problems and in the transfer of men from the (so-called) non-essential to essential services. Dealers who have ideas in connection with war-saving methods which can be carried out without interference with present efficiency should write Mr. Shaw.

## The Aircraft Board

Munsey Bldg., Washington, D. C.

Howard E. Coffin, chairman, should be communicated with in the first instance in regard to any matter appertaining to airplanes, etc. There are many departments dealing with materials, supplies, etc., located at the Signal Corps Aviation Section office at 119 D St.

## The War Industries Board

18th and D Sts., Washington, D. C.

Bernard M. Baruch, chairman.

Rear Admiral Frank A. Fletcher.

Hugh Frayne.

Colonel Palmer E. Pierce.

Robert S. Brookings, finished products. Robert S. Lovett, priorities.

H. P. Ingels, secretary.

J. L. Replogle, steel. J. F. Guffey, oil.

This board is a sort of clearing house for the various committees which are in close touch themselves with manufacturers of all kinds of war material. It does not deal directly with the automobile industry, but acts through the Automobile Industries Committee. It is understood that Dr. Lovett, who issues the priority orders covering the transportation of coal, steel, munitions and goods, will in future cooperate more closely with the automobile industry through H. L. Horning of the War Board. Mr. Horning deals with problems connected with passenger cars, trucks and tractors.

## The Council of National Defense

Washington, D. C.

The Secretary of War, chairman. The Secretary of the Navy.

The Secretary of the Interior. The Secretary of Agriculture.

The Secretary of Commerce.

The Secretary of Labor.

Walter S. Gifford, director.

Grosvenor B. Clarkson, secretary.

All boards and committees are in touch with the Council through the War Industries Board. Meetings between the various trade organizations are of daily or even hourly occurrence and the Council of National Defense is the final court of appeal in the event of ideas conflicting.



Train of American Military Trucks Winding Across Country Somewhere in the War Zone in France. Showing how Food, Ammunition and Men Are Brought Up From the Railroads to the Trenches

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## **EDITORIALS**



## Speed Up the Good Work

RANSPORTATION is one of the most important items that is confronting our Government today. Unless proper transportation is provided on land and sea, manufacturing of munitions and war equipment and the raising of bumper crops will be of little moment without proper and sufficient means to carry the finished products to their destination. And this transportation work must not be carried on in a one-sided way. Every available carrier must carry its maximum load at all times.

The Return Loads Bureau idea, which has first been put into practical use by the State of Connecticut, should certainly be put into operation by other States and cities that have motor truck routes running between business centers. It is encouraging to note that the Motor Truck Association of Philadelphia, the Motor Truck Club of New York and representatives from New Jersey, Baltimore and Washington are now working on plans to perfect Return Loads Bureaus in the Eastern states.

To those who are not familiar with the Return Loads Bureau a few words may not be amiss. Such a bureau does not necessarily mean an extensive organization. It can profitably be established in every city and town and in many the local truck organization will handle the job. The first thing necessary is to obtain the names of all truck owners in the State or city and then write to them for the number of trucks they can put into service for overland haulage work, their size and what routes they usually follow. This information is then tabulated and the place where this information is kept should be then locally advertised so that a truck man coming into the city may know where to get information regarding a return load.

## Details Deserve More Consideration

THERE seems to be one point in truck construction that is perhaps subject to greater strain than most any other, and unfortunately seems to give way. We refer to the front wheel stub axle. Quite a few trucks have been noticed laid up with breaks of the stub axle at the point of connection with the upright pivot portion of the forgings. In some of these cases the fillet was not sufficiently large in diameter; in others the fracture was undoubtedly due to carelessness on the part of the operator and the excessive wear; on still others the spindle was not sufficiently tapered; in other words, it was not large enough in the section at the point where it joins the upright.

This is a part of the construction which is apt to be disastrous in results when it breaks. It may not only cost the wreck of the truck, but even the life of the driver, and the factor of safety at this point, we believe, should be increased.

## Give the Trucks a Good Overhauling

ANY motor trucks have been given extremely rough treatment during the winter months, and although these machines do not show distinctive signs of wear and tear now, they will, eventually, and probably within the next few months. Motor trucks will be called upon to perform an extra heavy amount of service this spring and summer, because all our transportation will have to be speeded up to the limit, and it will devolve upon motor trucks to handle a great share of the burden. Of course, every truck should always be kept in first-class running condition. But under pressure of work many truck owners are prone to sidetrack such matters until some other time. Many a serious delay can be avoided by periodically examining the vital parts of a motor truck and making adjustments or repairs as soon as they develop.

Now is the time for the traffic manager to rearrange his delivery schedules so that a truck or two can be sent to the repair shop each week for overhauling. Truck repairmen should communicate with truck owners upon the advisability of having their machines overhauled at this time. A good overhauling now will put the trucks in first-class shape for the spring and summer months when unusual transportation problems will have to be met.

## Moving the Hands of Time Ahead

PRACTICALLY every important activity of the present day will be benefited by the inauguration of the Daylight Saving plan. Efficiency will be increased through working more during daylight than under artificial illumination. An immediate reduction in the use of light and heat will be effected. There will be less danger of accidents in transportation and local traffic because the usual rush at the end of the day will be moved up into daylight. It is at the end of the day that human energy and efficiency is at low ebb and daylight instead of darkness will have a revivifying effect.

In trucking there will be a decrease in the number of accidents which occur during one hour of darkness, relief from the strain of driving at night, an increase in the life of the truck resulting from the ability to operate it better in daylight, and other indirect benefits.

Garage owners will experience an increase in efficiency and a decrease in running expenses. Bills for gas and electric light will be cut down. Inspection, overhauling and repairing will be facilitated.

The plan is to advance the clocks one hour from April I to November 30. It is estimated that the saving in coal alone will total some 804,000 tons. At any rate, the saving effected and the increase in efficiency and safety are sufficiently obvious to impel everyone to willingly adjust himself and his interests to the new conditions should the proposed bill pass the Congress.

# Efficiency of the Motor Truck in Terms of Cost Per Ton-Mile\*

By R. E. CHAMBERLAIN, Truck Sales Manager, Packard Motor Car Company

TANDARDIZATION is one of the benefits already growing out of the war. Its entrance into the commercial vehicle industry will improve in many ways our new agent of transportation—the motor truck—for to have standardized truck cost methods alone will be a great achievement. In the discussion of our present subject it will be necessary to standardize two terms before we can proceed.

The cost per ton-mile by which we wish to measure efficiency, can be determined when we know, first; the daily cost of operation and second, the ton-miles of work performed. Let us analyze each one of these items separately, taking first the daily cost of operation and that this cost may be very definite we will confine our thought to the cost per day at work.

## Need of Cost Data

Cost data available today is very inaccurate and of wonderful variety. The new way of transportation developed rapidly. The need of records gradually forced itself upon us. Each in his own way, we have worked out the problem, satisfied, at least, in a measure with our result. These results already begin to show their defects. We had not studied costs as their importance demanded.

Truck costs should contain at least; interest on the investment, insurance, taxes, license, driver's wages, garage, fuel, lubricants, repairs and overhauls, tires and depreciation—sinking fund.

The first essential is that we compile costs according to a common standard. And that it may be possible for truck owners to obtain a standard system, a committee of men experienced in the various phases of this problem are already working out a system to be known as the National Standard Cost System for Trucks. (See following article.) The present operating efficiency can never be greatly improved until cost figures on equipment operated under different conditions is compared. We believe this will soon be possible.

#### Defining the Ton-Mile

The second term which must be clearly defined before we can determine our truck efficiency is "ton-mile" which is but one form of the "unit mile." What is the ton-mile? Defined, it is the carrying of one ton one mile. To illustrate—a two-ton truck loaded to capacity carries its load one mile and is unloaded. By our definition the truck has performed two ton-miles of work. If it returns to the starting point empty it has still performed but two ton-miles. This fact is not clearly understood, for several methods used at present in figuring ton-mile fail to recognize it. To determine just how these methods affect the

\*Paper prepared by R. E. Chamberlain, truck sales manager of the Packard Motor Car Co., for the American Road Builders' Conference at St. Louis, February 5, 1918.

checking of truck efficiency let us consider the following conditions shown in chart No. 1:

#### Basis for Figures

(C) Tr	ick Capacity	 5-to
(M) M	les per day	 .40
(T) Tr	ps per day	 8
	y cost\$	
(A) To	ns per day	 .40
	erage miles per trip	

#### Load-One Way Only

Question 1.—What is the ton-mile capacity of a 5-ton truck running 40 miles per day? According to the definition, 5 tons x 40 miles equals 200 ton-miles.

Question 2.—Since our truck carries a load only one way and returns empty how many ton-miles does it perform? The loaded distance is one-half the daily mileage; therefore, 5 tons x 20 miles equals 100 ton-miles. Our truck is working 50 per cent efficient.

Mr. Jones says he figures ton-miles by multiplying the total tons carried per day by the total miles traveled. That means in our example 40 tons x 40 miles, which equals 1600 ton-miles. Is our truck operated by Mr. Jones 800 per cent. efficient? Is he operating it 16 times as efficient as we?

Mr. Harris says he figures ton-miles by multiplying the average trip tons by the total miles per day. The average trip-tons in our example is 5, which multiplied by 40, the daily miles, equals 200 ton-miles. Is our truck operated by Mr. Harris 100 per cent efficient. Is he operating it twice as efficient as we?

Let us see how Mr. Smith figures tonmiles. He claims to secure the same answer in either of two ways. The first is to multiply the average trip tons by one-half the miles per day, which is 5 tons x 20 miles, a total of 100 ton-miles. His second method is to multiply the total daily tonnage by one-half the average trip miles, which is 40 tons x 2.5 miles, a total again of 100 ton-miles. In either case the truck, while doing all it can on this type of a job, is operating only 50 per cent efficient.

When we compare the answers by Smith's methods to the answer of question 2, we find that both his methods check the operating efficiency of our truck. Now, since this is one of the offices of the term "tonmile" we will use one of Smith's formulae in compiling Chart No. 2:

Methods Formulæ Ton-Miles T-M Cost Oues. No. 1:

Ques. No. 1:		
(C) x ½(M)	100	.135
Ques. No. 2:		
(Our Cond.)		
(C) $\times \frac{1}{2}$ (M)	200	.135
Jones $(A) \times (M)$	1600	.0084
Harris (C) x (M)	200	.067
Smith (C) $x \frac{1}{2}$ (M)		
or	100	.135
$(A) \times \frac{1}{2}(B)$		

Now it will be interesting and instructive to compare the ton-mile costs of Jones, Harris and Smith with the ton-mile costs found from the answers to questions I and 2 as in chart No. 2. The answer in tonmiles to question I was 200, which divided into \$13.52, the daily cost of operation, equals \$.067 per ton-mile. And the answer to question 2 was 100 ton-miles, which gives a cost of \$.135 per ton-mile. Now by Jones' method we obtained 1600 ton-miles which means a ton-mile cost of \$.0084. Harris' method with 200-ton miles gives \$.067 per ton-mile and either one of Smith's methods showing 100 ton-miles gives a ton-mile cost of \$.135. It is our opinion that Smith's cost per ton-mile is the fair one.

## Features in Truck Efficiency

Having determined what our standard of daily cost and ton-mile should be we can proceed to the last and most enlightening part of our present discussion, namely, truck efficiency.

First—Truck efficiency is determined by design, but since this is outside our subject it will not be discussed here.

Second—This efficiency is determined by the present use given the truck. In our stone-hauling example the type of work limited the possible truck efficiency to 50 per cent. Some recent traffic analyses have shown that the average operating efficiency is not above 37 per cent. With a ton-mile cost of \$.067 at 100 per cent this average condition would produce a cost of approximately \$.181. We have analyzed conditions that were but 18 per cent efficient and they would increase the ton-mile cost to \$.372.

As a third and last step, it will be interesting to analyze truck efficiency as effected by road conditions. The California State Automobile Association has conducted tests showing the resistance per ton offered by roads of different kinds. In our comparisons we will consider three of the roads investigated. The resistance of unsurfaced concrete at 30 lb. per ton will represent our standard. The tests showed that a concrete road surfaced with asphaltic oil and screenings offered a resistance per ton of 50 lb., a gravel road in good condition offers 82 lb. and an earth road with dust offers 99 lb.

For comparison assume that a 3-ton truck is able to make 12 m.p.h. in running speed over our standard road. Its comparative speeds with capacity load over the different types of road which we have chosen would be as follows: Surfaced concrete, 7.2 m.p.h.; gravel (good), 4.8 m.p.h.; earth (little dust), 3.6 m.p.h.

Now assuming that the truck runs 7 hrs. per day, we can determine from the above the speeds in m.p.h., first, the miles traveled per day and then the average ton-mile

costs for the corresponding day's work. We give only the relative costs per ton-mile, which are as follows:

Surfaced concrete \$.163
Gravel (good) ... 194
Earth (little dust) ... 207

That we may get the full force of this comparison let us apply it to the present use of trucks.

## **Expensiveness of Poor Roads**

There are in use in the United States approximately 400,000 trucks of all makes and capacities. Assuming that they are all of the 3-ton capacity, that they work an average of 300 days per year and make 30 miles per day, each of these trucks if 50 per cent efficient would produce 13,500 ton-miles per year. The 400,000 trucks would produce the enormous total of 5,-400,000,000 ton-miles.

Going a step farther, if we multiply this total in ton-miles by the ton-mile cost of the different types of road as above, we

will have a picture of present truck accomplishment.

## Per Ton-Mile

On concrete roads:

At \$.163 per ton-mile......\$880,200,000 On gravel roads:

At \$.194 per ton-mile......\$1,047,600,000 On earth roads:

At \$.207 per ton-mile......\$1,117,800,000

These figures show that if all our roads were concrete instead of gravel we would save \$167,400,000. If they were concrete instead of earth the saving would be \$237,600,000. And if they were gravel instead of earth transportation by truck would be cheaper by at least \$70,200,000.

The Government and business generally should give immediate thought and action to this question: "How many miles of improved roads could we build with the excess cost of present transportation by motor truck due to the lack of improved roads in America?"

temperature considerations which, besides affecting operation cost, generally are important factors in such lines of business as meat packing, ice, and wholesale grocery. The various items under Cost of Repairs can be had from garage reports and D. S. R.

In making a summary of the operations for the month on Form 2 from the daily record the following points are suggested under the divisions noted:

A—Days operated. This item should include all whole and fractions of days when truck was actually in service. This is necessary and overhead charges may be properly distributed.

B—Number of trips. Kept on Daily Service Record. (Abbreviated D. S. R.), posted to Form 1, footed and posted monthly to Form 2.

C-Same detail as "B."

F—Miles. Morning and evening readings of Odometer should be kept on Daily Service Record. Subtract morning reading from evening reading and follow detail of item "B."

G—Gasoline or current. Gallons of gasoline or other fuel or K. W. H. of current used should be kept on D. S. R. With this record, the detail of item "B" can be followed.

H-Cylinder oil. Usually noted in pints on D. S. R. Follow detail as in "B."

Driver and Helper Cost. Should be noted to check Drivers' and Helpers' Wages, included in "charges by day, month or year." Form 3B.

I—Time in hours and minutes when truck was available but not used. D. S. R. should note this fact for all time during regular work days when truck is idle without work.

J—Time in hours and minutes loading. The D. S. R. should record time reporting for work, the time of starting each trip and the time of ending each trip. With this information proceed as follows: Subtract time beginning work from time out on first trip. Subtract time of ending first trip from time of starting second trip. Repeat for each trip. Subtract time of ending last trip for stopping time. Add together all

## Using a Standard Truck Cost System

## Method Proposed Will Enable an Accurate Recording and Analyzing of Daily and Monthly Summaries From Daily Service Records

HE purpose of the National Standard Truck Cost System is to enable the truck owner to include under one cover the complete cost and operation data of one truck for one year and to arrange the records in as accessible a way as possible. The system also tends toward simplicity and yet includes all information that can be of vital importance to him who controls the purchase and operation of trucks. Efficiency is the prime and cardinal feature underlying the development of this system.

#### Make-Up of the System

There is a complete set of rules for figuring the different items so that a clerk or stenographer can easily keep the record. The driver of the truck carries a daily service record (D. S. R.) upon which the fundamental operating data is recorded. Separate pads are furnished for this purpose.

Six forms have been worked out—Forms 1, 2, 3A, 3B, 3C and 3D. On the first form the daily service records are entered for monthly posting. Form 2 is for daily and monthly summaries of operating data and average costs. The next form, 3A, is an investment chart which serves as the basis for fixed expense. Form 3B is arranged for the computation of fixed monthly and yearly expense; Form 3C, for accumulating the variable expense by months for one year, and 3D, for accumulating the total expense by months for one year.

The system, therefore, includes the important points which the truck executive should know if he is to keep in touch with the success of his trucking operations and be ready for improvements and changes when the records prove such necessary.

#### Working the Forms

The first form—that upon which the daily records are posted—includes weather and

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this time for each day. If the lunch hour occurs between trips, subtract from above daily total the time spent at lunch. Post to Form 1, foot and post monthly to Form 2.

K—Running time in hours and minutes including delivery or pickup stops. Subtract the time of starting each trip from the time of ending each trip as shown on the D. S. R. Add the results of each subtraction. If the lunch hour occurs on some trip subtract from above total the time spent at lunch. Post to Form 1, foot and post monthly to Form 2.

L—Hours and minutes laid up for repairs. This can be secured from notes made on D. S. R. Time spent Sundays, holidays, or nights when the truck does not regularly work should not be included.

M—Days with helper. This record, including number of helpers, if any, and time when used, should be noted on D. S. R.

## Obtaining Averages for Form 2

BI-Trips per day. Divide item B by item A, Form 2.

CI-Deliveries or pickups per day. Divide item C by item A, Form 2.

DI—Total loads in units.....per day. Add items D and E and divide total by item A, Form 2.

EI—Average load in units......

Divide item DI by item BI.

E2—Unit......miles. Use same unit as DI. Divide item F2 by 2 and multiply by item DI.

FI-Miles travelled per day. Divide item F by item A.

F2-Average round trip distance. Divide item F1 by item B1.

GI—Miles per gallon of gasoline. Divide item F by total gallons used per month.

G2-Miles per K.W.H. (Electric). Divide item F by total K.W.H. used per month.

HI-Miles per pint of cylinder oil. Divide item F by item H.

JI-Average hours loading per day. Divide item J by item A.

K1-Average hours running (including stops) per day. Divide item K by item A.

J2-Average minutes loading per trip. Divide item J1 by item B1.

P-Average speed in m.p.h. Divide item F1 by item K1.

Q—Estimated running time per mile. Trucks generally are equipped with a governor. Traffic conditions will not allow a truck generally to be run at its governed speed. Establish a figure which it is believed will represent the average time per mile for traffic and road conditions. If a 3-ton truck averages 10 m.p.h., its running time per mile would be 6 minutes.

R-Estimated time per customer's stop (in minutes). Multiply item F1 by item Q. This equals running time actually required as estimated. Subtract this answer in minutes from item (K) and divide by average number of customers served per day. This will give a very close figure on the average delivery time per customer.

S-Cost per day operated. Divide Total Monthly Expense by item A.

T-Cost per mile. Divide item S by item

U-Cost per unit. Divide item S by item DI.

V-Cost per unit mile. Divide item S by item E2.

## Suggestions on Cost Items

Interest on investments. This investment should be the average yearly investment existing during the book life assigned to the truck

Service, Maintenance and Repair, Estimated or Battery Renewals and Maintenance Estimated, Tire Cost Estimated and Sinking Fund.

Total monthly expense. Add Fixed Monthly Expense corrected for wages to Variable Monthly Expense.

Corrected total after adjustment. This will be Total Monthly Expense corrected

	TRI	D		P	. IVI.	-	
0.	Start	Finish	No. of Customers	Load Out	Load	Helper	Odometer reading finish
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2							Mileage per day
3							Gasoline, gallons used
4							
5				1			K. W. N. Current (electric)
6							Oil, cylinder, pints used
7							Lunch fromto
8							Incidentals
	DAILY T	OTALS					
R	Remarks:	accidents	time lost, t	ire adi	ust. ro	ad condit	ions, etc
			, 1000, 6	auj	250, 10	ad condit	action Color

Garage. This item should include rent, light, heat and power or if owned, standard items on cost of owned property as interest, taxes, insurance, upkeep, light, heat and power.

Garage service. This item should include supervision, washing, greasing, oils and grease other than cylinder oil, and depreciation of spare parts carried in stock.

Variable monthly expense. Add items Total Fuel Cost, Cylinder Oil Cost, Garage when actual tire and repair costs are known and the difference between the actual and estimated has been determined and evenly distributed to each month.

The Standard Truck Cost System has increased value in view of the present need for efficient truck operation to carry on the conduct of the war. Its features should also be instructive to those interested in standardized costs.



Four-Wheel Drive Truck Transporting a Gun Across Field Somewhere in France
This is probably only a test of the possibilities, but it may be an actual instance of the use of a motor
truck to convey artillery up to the front-line trenches

## Commercial Car Field for the Year 1918

By C. P. SHATTUCK

RESENT transportation conditions are affording the motor truck industry an opportunity to demonstrate the versatility of its product. Not only are motor trucks increasing their radius of activity, but they are being exploited in fields where heretofore transportation was confined to the horse and the railroad. The successful truck manufacturer must anticipate his market, must carefully consider those influences that may arise in the development of his market as well as take into consideration the effect which the war is having on the truck field, especially in its relation to transportation.

That the war and the resultant congestion in freight and other conventional methods of transportation have influenced the manufacturer is indicated by a resume of the plans of the motor truck industry for the season of 1918. Despite the fact that the number of commercial cars produced in 1918 will greatly exceed that of the previous year, an analysis of the commercial car review, as presented in the January and February numbers of the COMMERCIAL CAR JOURNAL, shows that there are 71 less makes to be marketed in 1918, or a decrease of approximately 18 per cent over last year.

#### Less Chassis Models

While it is true that the tendency of the manufacturer to retrench or reduce the number of chassis was pronounced in 1917, it is even more so this year. In 1917 there were 535 models offered. That the policy is now to concentrate on a single model is indicated by the fact that this year there are 38 per cent less models or chassis, or in numbers, 332 less.

While a greater number of what is termed the delivery or light type of chassis is being produced, it is interesting to note that five different capacity types have been discarded by both the Eastern and Western manufacturer. Three years ago the smallest capacity chassis was 600 lb. In 1917 one such model was marketed, and this year none. The 750-lb. capacity vehicle is not offered for 1918. These small cars were, with one exception, the product of the West.

The 1¾-ton is another type that has been discarded. This capacity was produced by one maker in 1917 and in two models. The ¼½-ton shares a similar fate, two makers offering such a chassis last year. The 5½-ton, an Eastern product, and which was seen in four models last year, is now a thing of the past, as are the 6½- and 7½-ton chassis, all of which were products of the

## Lighter Capacities Predominate

The accompanying table is of interest in that it shows the percentage of decrease in the number of models of varying capacities. In some instances the decrease is as high as 50 per cent, and, as may be noted, the tendency is apparently toward the use of lighter capacity chassis. This would also indicate the development of a field for vehicles of greater speed and capable of a greater radius.

Despite the increasing cost of labor and material, the advance in the average price of the chassis is not marked; in fact, in some instances the list price is less than a year ago. This is true of the 800- and 1000-lb. capacity models and the  $2\frac{1}{2}$ -tonners. Three types, the 1500-lb., the 1-ton and the  $2\frac{1}{2}$ -ton, list for less than they did in 1916.

The 1-ton and 2-ton types, which lead insofar as the number of models is concerned, have increased in cost to the consumer by \$6 and \$190 respectively, as shown by the table. The greatest advance is with chassis of 5- and 7-ton capacities, these increasing \$400 and \$688 respectively. These figures refer to the average price of the chassis.

As was to be expected there has been an increase in the number of models equipped with some form of ignition relying upon a

battery as the source of current supply. In 1917, 15 of the 535 models, or 3 per cent, were equipped with battery ignition. This year there are 35, or 11 per cent, which means a gain for the advocates of the battery form of ignition.

It is of interest to note that whereas during the past two years the Western makers have led in numbers, insofar as battery ignition is concerned, the pendulum has swung the other way this year, for of the 35 models battery equipped, 20 are Eastern made cars.

#### Use of Starters Greater

Those who predicted a greater use of engine starters in 1918 doubtless based their prophecy on the grounds that the increasing use of motor trucks in what may be termed 24-hr. service, would require effective means for illuminating the highways, particularly where the vehicle is engaged in long hauls and night service.

Of the 332 models listed this year, 77 are equipped with starters, or slightly less than 23 per cent. This is an increase of 9 per cent over last year, when of the 535 models marketed only 75 were furnished with starters as standard equipment. Option was allowed by 12 makers.

The West may be said to have favored the engine starter as standard equipment, and even more so than the Eastern makers. In 1916, 34 of the 62 starter-equipped models were of Western make, and last year the West led by a majority of 37. The figures are reversed this year, as 45 of the 77 are Eastern makes.

Those who have closely followed the development of the commercial vehicle predict that another year will see an increasing use of the electric starter and electric lighting, that with improved methods for mounting the storage battery, protecting it against shocks, will come a greater demand for electric illumination of the highways.

C	APACITIES	500 lb.	600 lb.	750 lb.	800 lb.	1000 lb.	1200 lb.	1500 lb.	1 Ton	11% Ton	11% Ton	11% Ton	2 Ton	21 Ton	21/2 Ton	3 Ton	31 Ton	4 Ton	41% Ton	5 Ton	51/2 Ton	6 Ton	61/2 Ton	7 Ton	7½ Ton	TOTALS
1916	Makes Models Battery. Magneto Starter "Opt. Av. Price		1 1 1 1 \$425	2 2 1 3 3 \$630	4 4 1 3 4 \$690	20 25 4 21 10 1 \$689	4 4 2 2 2 2 3 3 \$966	34 41 5 36 6 4 \$1318	57 80 3 77 6 8 \$1599	2 5 1 \$1760	52 78 1 77 3 7 \$1881		77 135 135 11 7 \$2272	1 1 1 \$2250	19 30 2 28 3 1 \$2481	27 41 41 3 4 \$2976	37 56 1 55 2 3 \$3009	14 18 18 18 1 3 \$3492		27 41 41 1 2 \$4158	1 3 3 \$4000	14 17 17 3 1 \$4090	1 1 1  \$5800	3 5 5 2 2 2 \$4812	3 3 3 \$5000	400 591 21 570 62 41
1917	Makes Models Battery . Magneto Starter . Av. Price	- 1	1 1 1 1 325	2 2 2 2 \$742	2 2 1 1 2 \$852	17 17 6 11 11 \$810	2 2 1 1 2 \$800	27 33 3 30 13 \$1179	56 68 1 67 \$1506	5 7 7 \$1472	47 70 70 10 \$1911	1 2 2 \$2 \$2500	79 112 112 10 \$2300	1 1 32150	23 37 37 9 \$2512	15 20 20 \$3099	46 67 67 7 \$3270	8 11 11 \$3466	2 2 2 1 \$3575	38 53 53 4 \$4170	2 4 4 \$4038	8 11 11 \$4636		6 6 \$4725	3 5 5 \$4590	391 535 15 520 75
1918	Makes Models Battery . Magneto Starter	1			2 2 2 2 3	10 10 6 4 5 \$791	4 4 4 \$890	16 17 6 11 6 \$1200	48 49 9 40 18 1	5 5 5 \$2042	42 43 3 40 8 3 \$2160		64 67 1 66 12 1 \$2490	1 1 1 \$1775	20 22 22 4 1 \$2867	10 11 11 3 1 \$3332	47 49 49 4 2 \$3486	8 8 1 7 3 1 \$4069		32 33 1 32 4 1 \$4579		6 6 1 5 3 1 \$4867		4 4 1 \$5413		320 332 35 297 77 12



# TRIVOT ACCESSORIES APPLIANCES



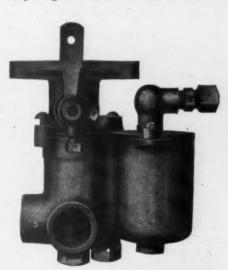
## Nervax Double Carburetor

A carburetor, in construction practically two carburetors, is being produced by A. J. Myers, 332 W. 70th St., New York City, the unusual feature of this carburetor being the fact that it possesses two jets and two throttles. The large, or main jet, for operating at medium and high speeds, is entirely isolated and removed from the influence of the vacuum in the intake manifold when running on small jet and throttle.

Around the large jet is a sleeve N, commonly called a choke-tube or Venturi, this being balanced by a ring weight M. As the engine is turned over, it pumps air up the suction pipe of the carburetor at S, and the end of this pipe terminates in the small passage behind the cone' N, and weight ring M, and enters the hole J, which is under the level of the jet G2. This causes a suction in the small carburetor, varying according to the opening of the small throttle Z of the first carburetor passage, and the lever K opens this first carburetor, which has an adjustment at Z, for idling speeds. There is a stop at L, which allows the main throttle V to remain closed until the throttle Z is fully opened. The gas then passes over the high speed, or second carburetor, until the engine is revolving about 700 r.p.m., whereupon the second or main throttle V begins to open. As the throttle to the main carburetor is opened. the air rushing in raises the Venturi from its seat and admits more air as the suction increases. The greater the velocity the more violently will the gasoline be sprayed out, and therefore the more thoroughly vaporized. The Venturi tube, as the suction increases, raises as far as the weight ring M, where its progress is arrested until the suction has increased sufficiently to raise this ring with the Venturi. Since the ordinary flow of gasoline from the jet would

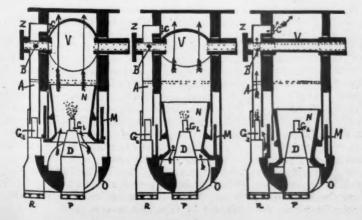
not remain constant, that is, not in proportion to the flow of air up the tube, this is provided for by the two shapes of the post D and the choke-tube N, which allow the air to increase, according to the strength of the suction.

The choke tube or Venturi for different engines must have a certain diameter to produce satisfactory operation, because the smaller the diameter, the greater the rush of air. This Venturi choke tube is accurately weighed to allow the inrush of air to



The Nervax Carburetor Complete

raise until it reaches its limited height. The jets as well, must vary according to the engine to which the carburetor is to supply the mixture. The carburetors are offered in sizes from 34-in. to 2-in., for engines of from four-cylinder, 2½-in. bore, to engines of six cylinders, 5½-in. bore, and range in price from \$15 to \$40. For 8 and 12-cylinder engines, a special carburetor size is furnished on estimate.

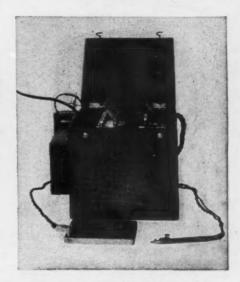


The Right View Shows the Carburetor in the Closed Position; the Middle View Shows Carburetor Half Open With the Venturi Partly Raised, and the Left View the Carburetor When the Throttle is Fully Opened and the Venturi Fully Raised

## Robinson Electrical Engraving Machine

A machine for electrically engraving hardened steel tools, etc., with any kind of mark or name, has just been placed on the market by the Production Equipment Co., Inc., 118 East 28th St., New York City. This machine is made for them exclusively by the R. I. Electrical Tool Co., Providence, R. I.

This machine is exceedingly simple to use. Lettering of any kind can be marked



Machine for Engraving Parts or Tools This device is useful for marking tools or parts to prevent their being stolen

on metals with no more effort than is required to write with an ordinary pen or pencil. Electrical connection is made from any light socket. The cost of operation is negligible.

As will readily be understood from its name, the Robinson Electrical Engraving Machine does not require the use of acid.

The tool or piece of work to be marked is simply placed on the plate shown in the fore part of the illustration, and the pencil is used in the same way as an ordinary pencil for etching in the steel whatever mark or lettering is required. A special resistance block with adjusting switches is supplied for regulating the depth of the etching to accommodate various thicknesses of steel, down to even ribbon steel.

The standard equipment is suitable for alternating current, but a special converter can be supplied for direct current.

This machine has been brought out principally for use in marking tools, gages and the like, such as are used in every machine shop, not only in the case of new tools, but

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also those in any tool room, thereby reducing to a minimum the liability of the latter being stolen.

A feature of the machine is that a special patented feature prevents sparking each time the pencil is applied to or removed from the piece of work to be marked.

## Kellogg Oil and Grease Gun

The accompanying illustration shows an accessory useful to the garageman, repairman and of interest to the retailer. It is the Kellogg combination grease and oil gun which is furnished with two curved spouts, 6 in. long, for oil and grease, so that inaccessible places about the car may be efficiently lubricated. A powerful cutrack and pinion movement give the necessary lever-



Kellogg Combination Oil and Grease Gun

age to handle the heavy grease without trouble. The piston creates a very powerful suction to insure complete filling of the gun. Threads in the cap and barrel are very large and coarse, which greatly reduces liability of damage to the same. The barrel is  $8\frac{1}{4} \times 1\frac{5}{8}$  in. capacity, 8 oz. The cylinder is steel with brass finish.

Retail price is \$3.50, offered by Kellogg Mfg. Co., Rochester, N. Y.

## Ten Eyck Ford Starting System

The Ten Eyck system for starting the Ford engine uses compressed air introduced into the engine cylinders and employs methods invented by Mr. Frank E. Ten Eyck. Mr. Ten Eyck has devoted 25 years exclusively to the invention and perfection of air devices.

Besides being used as a means of starting the Ford engine, this attachment also serves as a tire pump so that the tires can be kept at the proper inflation with little difficulty or trouble.

The Ten Eyck device is claimed to operate practically noiseless. It gives the engine a rapid spin. One advantage is that there is no storage battery to get out of order. There are no gears or clutches and the parts are interchangeable. One lever placed on the steering column is the only controlling member.

Three principal operations are performed by the Ten Eyck starting system. First, the filling of the storage tank with air to the desired pressure. Second, the retention of the air pressure after it has been secured. Third, the rotating of the engine by means of which the start is obtained.

The first operation is executed by a single cylinder air pump, driven direct from the engine crankshaft by a 1/4-in. Diamond roller chain.

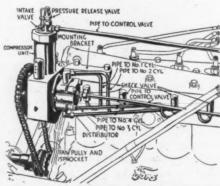
The second operation is taken care of by a double method and employs a night valve and a control valve. During the day the

control valve holds the pressure. When the car is not in operation for any length of time, as over night, the night valve may be closed. With the night valve closed, the air is prevented from escaping by two dependable valves, which doubly insure the retention of the air pressure under all conditions.

The third operation—that of starting—is performed by admitting the air pressure to the cylinders through a distributing valve which is attached to the pump body. This distributing valve is timed to admit air pressure to the cylinders in their firing order and turns over the engine at approximately 350 r.p.m.

Placed on the steering column and within easy reach of the driver is a two-way valve which is operated by a control lever. This is used for governing both the pumping of the air into the storage tank and the starting of the engine. In neutral position the control lever is vertical. A downward movement of the lever to the left turns the valve to the starting line, permitting the air to rush from the storage tank through the distributing valve to the engine, entering the cylinders at high pressure and "spinning" the engine. After starting, the lever is immediately returned to the neutral position. From 12 to 20 starts can be obtained when the storage tank is charged with full pressure of air.

To start the pump the control lever is moved downward to the right, which turns the valve to the pump line and the air is forced from the pump into the storage tank. When sufficient pressure has been obtained the control lever is again returned to neutral position, the air being pumped into space and the pump is idling. When pumping air into the storage tank the pump requires only



Attachment of Ten Eyck Starting System With Parts Indicated

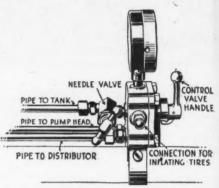
Specifications include a 30 x 7 in. storage tank under the car; a pump with a bore and stroke of  $1\frac{3}{4}$  and  $2\frac{1}{4}$  in., respectively; bronze bearing; forged steel crankshaft; splash lubrication; and cylinder, piston and piston rings ground to size.

1/4 horse power to do the work and when the pump is idling the power consumed is negligible. All pumping is done while the car is in motion. It is not necessary to stop the car when increased air pressure is desired in the storage tank.

For priming in cold weather there is provided on the floor board, just to the right of the foot brake pedal, a foot button connected to the choke valve in the carburetor. By depressing this button a full charge of gasoline is drawn into the engine cylinders and with the high pressure of air from the starter being admitted at the same time, forms a perfect firing mixture within the

cylinders and positively insures starting, even in the coldest weather.

The Ten Eyck Starting System is manufactured under the Ten Eyck patents by the Air Device Co., 2975 Cottage Grove Ave., Chicago, a company organized to manufac-



Gage and Control Valve Arrangement

ture and market the pneumatic devices invented and perfected by Mr. Ten Eyck.

The Air Device Co. is now ready to make arrangements for the handling of the Ten Eyck System by local automobile dealers all over the United States.

## New Gemco Garage Jack

This is the product of the Gemco Mfg. Co., of Milwaukee, Wis., and is designed especially for use in service stations and garages.

As the name implies, it permits raising or lowering the car by one down stroke,



The Gemco One-Stroke Service Jack

sufficient leverage being provided by thelong handle to raise any weight car. Thejack is simply shoved underneath the axleand is adjusted by moving the rod which terminates in a ball shaped end up or down.

The jack is made entirely of steel, weighs.
32 lb., and sells at \$15.

## Guaranty Power-Hoist Equipment for Converted Fords

The Guaranty Motors Co., of 864-8 Main St., Cambridge, Mass., has recently placed! on the market a power hoist attachable to any Ford car which has been converted into a truck. Power is taken from the driveshaft just in back of the Ford planetary transmission. The lever shown in the accompanying illustration controls the meshing and unmeshing of the power hoist gears and when the power hoist gears are meshed all mechanical connection of the power plant of the car with the rear axle is broken, this being cared for by the single movement of the controlling lever. After the hoist gears are meshed the body is raised by using the low speed pedal and I lowered by using the reverse pedal.

The enclosed gears, with the controlling lever mounted on the enclosure, measure just 12 in. in length. The front end is designed to fit the rear end of the Ford transmission, and the rear end of this gear box is an exact replica of the rear end of the Ford transmission. This makes it possible to use either the regular Ford driveshaft or any other driveshaft connection which is constructed to fit the Ford transmission, making it adaptable to any shaft driven or chain driven unit for

The base plate of the gear box is 6 x II in., reinforced, and is attached to the Ford transmission by four 3/8-in, machine bolts, and the casing or housing is fastened to this plate by eight 5-16-in. machine

Layout of the Guaranty Power-Hoist Equipment The hand lever shown controls the raising and lowering of the body in conjunction with the usual reverse and low-speed pedals of the Ford car.

The housing contains two gears so arranged that movement of hoisting lever disconnects the direct line of driveshaft and connects the power plant with the auxiliary and hoisting gear. This gear is keyed to one end of the 11/8 in. 3 ft. hoist power shaft.

A 21/2 x 9-in, winding drum is keyed on the rear end of the hoist power shaft.

Each end of winding drum is equipped with flanges of sufficient girth to ensure proper guiding and winding of cable. Front flange 3/4-in. thick and ratcheted to allow for a ratchet dog, which is retained in place by a spring. By means of a rod it is under control of driver at all times in its positive engagement with the ratchet teeth on the flange absolutely ensuring the load, when hoisted, against falling.

With the ratchet holding the hoisted load to desired height, by reverse movement of shifting lever the driver may at will disengage the engine from the auxiliary gear and enmesh with driving shaft, moving the car to any desired point.

The derrick consists of two 3-in. channel pieces 51/2 ft. high, with the upper ends brought together and held securely by a forged steel binder plate. A 3/4-in. steel bolt at the upper end, or head, supports two steel pulley blocks equipped with bronze oilless bushings.

The lower ends of the derrick are so turned and cupped as to permit a snug fit to the top of the unit frame and are secured on each side by two 3/8-in. bolts directly in rear of driver's seat.

The complete outfit includes the hoist proper, drum, cable, pulley blocks, derrick supporting arms and hoisting bracket for the body, necessary bolts, nuts, lock wash-

## **DuAl Ford Cooling System**

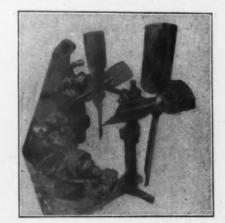
The DuAl cooling system was designed and built to meet the demand for an auxiliary air cooling device for the Ford car, in case the car is used for tractor and truck work. It consists of a large fan to be mounted in front of the Ford radiator and

all accessories necessary to mount and drive it from the Ford engine, and as well a shell or shroud over this fan.

The DuAl system is stated to increase gasoline mileage and economize on lubricating oils, at the same time giving the greater power to the engine.

The DuAl system can be installed in approximately thirty minutes and once on the car there will never be a desire to remove it. In attaching there is not a single hole drilled in either the frame or engine, same being attached by the original bolts and bolt holes on the car. The only

hole to be drilled in attaching the entire system is in the hub of the inner or original Ford fan. There are adjusting screws



The DuAl Fan Arrangement

The radiator has been removed to illustrate all parts of this auxiliary air-cooled system. The fans are driven from the same shaft, which in turn is driven by belt and pulleys supplied with this

for both front and rear brackets which will permit taking up any slack in the fan belt.

The methods used for going through the radiator for attaching the front fan does

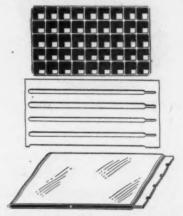
not interfere in any way whatsoever with the water tubes. The radiator fins are cut a distance of about 3 in. to insert the bushing which is used as a protection for the water tubes. A shell or shroud which slips over the original Ford radiator is furnished with the attachment together with all necessary parts to complete same.

Both front and rear fans are driven by a special fan shaft and are driven by a single belt from the crankshaft by original pulley.

This outfit is made by the DuAl Mfg. Co., 1202 Hennepin Ave., Minneapolis, Minn., price retail being \$25.

## Little Danger of Leakage in Coffelder-Barth Radiator

The construction of the new Coffelder-Barth radiator is in reality of the fin-andtube design, flat tubes, however, taking the place of the regular round ones. This is said to allow greater expansion, lessening the danger of leaks resulting from freezing. The tube is a single piece of copper with one joint which is machine soldered



Parts of Coffelder-Barth Radiator

under pressure. It is said that this type of joint is usually much stronger than the

In addition to obtaining a better soldered joint, the absence of excess solder on this core gives the radiator better cooling qualities, due to the fact that solder is a very poor conductor of heat. The tubes are notched in the front with a saw, the notches being equidistant. The fins are made from rolled copper punched with holes of proper size and shape to insert the tubes, the spacing of the holes being done automatically to insure equal distance between them.

The core is flexible, so that any twist in the radiator is taken up between the fin and the tube with on tendency to crack the joints. The advantages claimed are the sturdiness of a fin and tube type of core, economy in the use of material, a better soldered joint, an absence of solder on the inside and outside of the tube and a consequent increase in cooling effectiveness, room for expansion to allow for freezing, no embossing on the fins or tubes to weaken the metal and cause it to become brittle, and finally, in case of accident, both the fins and tubes are easily removable and can be replaced by new ones.

The Coffelder-Barth Radiator Co., 223 E. Third St., Cincinnati, Ohio, is the producer

of this new radiator.

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## New Cushion Truck Wheel Known as "Mead"

Vibration and strain from side thrusts are two important factors affecting the life of any truck. It is obvious therefore, that the most resilient wheels and the best spring suspension compatible with strength and capacity be used to minimize the destroying action of vibration.

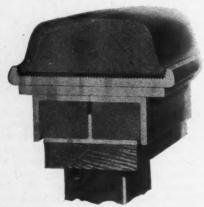
Cushion truck wheels have been undergoing developments and improvements for a number of years and much of the success of the truck's wider adaptability is due to these wheels. The most recent develop-



Mead Truck Wheel With Cushioning Parts Exposed

ment is the Mead cushion wheel. It is a complete wheel with a special construction designed to more completely absorb the road and load shocks.

The difference between this wheel and the conventional type lies in the fact that there is a special rubber cushion placed between the spoke rim and the tire rim. The illus-



Make-Up of Cushion Feature in Detail

trations show the main features in the make-up of the Mead wheel.

In the cushion device there are two sections of rubber, each having air holes at regular intervals. These two sections run side by side on a metal rim placed over the spoke rim. This metal rim has a dividing wall cast integral which separates the two rubber sections. This provides for taking up side-thrusts.

There are about five divisions in the rubber sections surrounding the circumference of each wheel. These divisions are made

by having cross members cast integral with the metal rim and extending up between the rubber sections at regular intervals. Thus by dividing the rubber cushion in this way with a solid wall of metal at each division, strain of skidding is taken up. These projecting walls also aid in holding the rubber cushion in place.

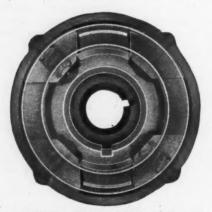
Over the rubber sections are placed two angles which run around the circumference of the rubber and act as a container and a protector for the rubber. Around these two angles is run the main tire rim into which the solid tire is pressed.

The Mead cushion truck wheel has an initial cost greater than the usual wheel, but the saving effected by the more perfect cushioning with decreased vibration and shock is said to overbalance the increase in initial cost.

The Mead Mfg. Co., 7952-58 S. Chicago Ave., Chicago, Ill., is the manufacturer of this Truck wheel.

## Rayfield Shaft Coupling

A new coupling adaptable to all magneto, generator or pump shaft drives, has recently been brought out by the Geo. D. Bailey Co., 1120 S. Michigan Ave., Chicago, Ill. It is called the Rayfield and is similar in con-



Rayfield Coupling Which Has Automatic Take-Up for Wear

struction to the Oldham type, but has an automatic spring take-up for wear and to prevent noise.

A ring, 2 in. diam. and 3 3-32 in. thick, composes the center piece. Two triangular steel blocks are riveted solidly to the inside of this ring. Midway between these two solid blocks, two similar blocks are loosely riveted and are impelled inwardly by small coil springs. Conventional shaft end members, each with two projections or jaws, are inserted between the blocks, thus forcing the loose blocks outward from their inner rivet heads by deflecting the springs. The loose blocks are kept close to the jaws at all times by the pressure of the springs. This eliminates much of the looseness, rattle and back lash experienced.

Universal action and adjustments for timing magnetos are features of this coupling. The material used in its construction is said to be such that very little wear is evidenced.

## Beach Automatic Grip Puller

A tool useful in many ways and quite indispensable to the average garage man is the Beach automatic grip puller. It is a wheel and gear puller and when once the jaws are closed on the work and the screw is set against the shaft, it is impossible for them to unhook. Tightening the screw forces the jaws inward, automatically gripping the work, throwing pressure toward shaft or axle, making it more positive so that less pressure is required.

It is offered complete with two sets of jaws; three 7½-in. jaws (opening to 10 in.), and three 12-in. jaws (opening to 18 in.).



Beach Automatic Grip Puller It is useful in removing gears, flanges, couplings, universal joints and numerous other parts

Either a two or three jaw combination may be used, as there is an extra jaw socket directly opposite one of the other jaws. It is also made with a locking device by which the jaws may be set and locked in any position, which makes it a one man puller.

It is manufactured by the Greb Co., 176 State St., Boston, Mass. Price \$20. Discount to jobbers, dealers and garages.

Singer Auto Traffic Signal Co., St. Louis, Mo., has moved to a factory building at 3917 Olive St., where it will have a floor space of 10,000 ft. This company manufactures a device which signals "stop," "right," etc., at the tail light.



Ignition Parts Case and Stock Cabinet
Cabinet given to the trade free, designed to be
used with this concern's individual container
service envelopes for ignition parts and brushes.

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## Foss-Hughes Door-Opening Mechanism

Illustrations of the Foss-Hughes pneumatic door-opener mechanism described in the February issue, page 70, are shown herewith. The air piston shown in the center of one illustration is bolted to the ceiling. This piston is of the double cupped variety with piston rods extending through stuffing

PULLEY FAST
TO CONTROL
VALVE

POUBLE
POSTON

AR PISTON
ABOUT 6FT LONG SIN. DIA

APPULLEY FAST
TO CEILING

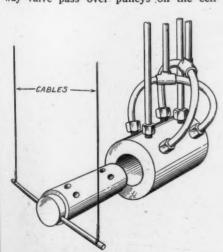
A A A A A A

Diagram of the Foss-Hughes Door-Spring Mechanism

With this pneumatic outfit, doors can be conveniently opened and closed from any part of the garage.

boxes at each end. When the piston moves, the piston rods, through equalizers, pull the set of cables that pass over the pulleys (A) fastened to the ceiling or to the door frame as shown. The doors are shown closed. The reverse motion of the piston, which is upward on the paper, it will be seen, will pull the cables around the pulleys (AA) at the bottom of the diagram, and thus open the doors, as these cables are fastened to pins on the doors as shown. The operation is controlled by a special valve which can be operated from any part of the garage where control handles are placed.

The cables that operate the double threeway valve pass over pulleys on the ceil-



The Double Three-Way Valve
Controls the air pressure, sending it to either
end of the piston and exhausting it from the

ing and are supplied with handles at different points in the garage, such as the wash rack, the stenographer's desk, in the office, and at one or two places around the garage so that the doors can be opened without going to the front of the building. The two straight upright pipes connect with the opposite ends of the ceiling cylinder. The two holes at the forward end of the plug act as a valve to admit the compressed air to the end of the cylinder. While in this position, the two holes at the opposite end of the plug permit the air in the opposite end of the cylinder to be exhaust-When the wires are pulled again the reverse condition exists and air enters through the upright pipe at the right of the valve and is exhausted through the left end

## Advantages of Tinol Flux Paste for Soldering

Tinol Flux is the result of scientific chemistry of much patient experiment and trial, and is responsible for the success of the well-known Tinol Paste Solder. For much work ordinary bar solder, at its much lower price, is good enough, but for many jobs Tinol Paste Solder is most useful.

The advantages of Tinol Flux Paste may be summed up thus; it insures a sound job; it is non-corrosive, non-injurious, quick and efficient. Trial box, 10c. Price and discount lists may be obtained from Hess & Son, 1031-33 Chestnut St., Philadelphia, Pa.

## **Tell-Tale Piston Rings**

The Tell-Tale ring is a new piston ring individually cast and of the one-piece type with step-joint. The maker states this ring retains its tension under great heat. On the outer circumference of this ring is a channel with vents below, these to provide for the reception and uniform distribution of the oil supplied to the cylinder walls, whether the supply is large or small. The oil,



The Tell-Tale Piston Ring

Notice the oil channel and vents on the wearing surface to provide equal, distribution of the supply of oil.

following the path of least resistance, readily flows in and out of these cavities, thereby greatly reducing the possibility of the oil reaching the combustion chamber. Because of this the danger of excessive carbon deposits in the explosive chamber is eliminated.

Another feature of this ring is the turned wearing surface, which enables it to seat itself more readily, and quickly adjust itself to any slight irregularity of the cylinder walls. These rings are produced by the Vulcan Machine and Tool Co., of the Syndicate Trust Bldg., St. Louis, Mo. Steven D. Hartog, the inventor of this ring, is secretary of this concern.

## Electric Lighting Outfit for Country Garages

The Mayhew Co., Milwaukee, Wis., has added to its line a direct connected lighting set known as the type K Mayhew-Electric, this being suitable for garages.

The outfit consists of an engine, a generator and a switchboard mounted on one base, also a storage battery which is shipped separately. The engine is of the 4-cycle, water-cooled type and a large water tank is provided for cooling. The gasoline tank is contained inside the engine base and the fuel feed is through a simple form of plunger pump which manitains a uniform supply of gasoline in the carburetor.

The generator unit has a capacity of 800 watts, and the storage batteries furnished are said to have sufficient capacity to pro-



The Generator and Switchboard of the Mayhew Outfit for Electric Lighting, Especially in Country Garages

vide current for all of the light required in an ordinary garage for a considerable period of time before it becomes necessary to recharge them. When they are discharged, or nearly so, the generator is started and is allowed to run for several hours to completely renew the charge in the battery. In the average installation this may be necessary about once a week, depending, however, on the number of lights used each night and the length of time they are burned.

No new or radical features are incorporated, the entire design being worked out along the lines of established practice. The plant starts by pressing down a small lever and stops automatically when the batteries are charged.

The type K Mayhew-Electric is furnished with batteries of 60, 125 and 160 ampere-hours capacity and these sizes will take care of practically any condition encountered in garage or individual residence lighting.

## Minerva Tractor and Truck Engine Developed

A new engine designed primarily for truck and tractor use has been designed by the Minerva Engine Co., Cleveland, Ohio. Although the object was to make the engine especially suited for very hard service, its design and construction do not depart from the general principles that have been found most satisfactory in engines of this

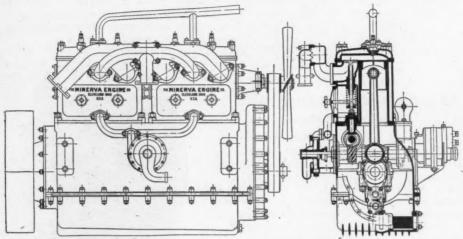
A shaft placed at right angles to the camshaft drives the water pump and magneto. This brings the pump and magneto on the center line between the two cylinder blocks, the former on the right and the latter on the left side of the engine. Helical-type gears are used. Either the pump or the magneto can be removed without disturbing the other.

The water pump is of the centrifugal type, the impeller being placed on a shaft

plate being interposed for that purpose between the upper and lower sections of the crankcase.

A special construction of the breather pipes and oil filler pipes is designed to prevent dust or dirt from entering the crankcase.

The exhaust manifold is constructed so as to allow provision for heating the incoming mixture by the exhaust gases. This aids materially in carburetion.



General Design of the New Minerva Engine for Truck and Tractor Service

type. It is said to be, in reality, a combination of those essentials recognized as desirable in such an engine.

It is of the vertical type with four cylinders and a bore and stroke of  $4 \times 5\frac{1}{2}$  in. The cylinders are cast in block and are of the L-head type with removable head. A feature in the cooling is that a water-jacket space is run entirely around each cylinder for its entire length.

The division between the upper and lower section of the crankcase casting is below the center-line of the main bearings, which permits the inspection plates being placed so as to allow direct and easy inspection of the bearings. Supports are machined on both the front and rear of the engine so that it can be easily mounted on practically any conventional tractor or truck frame. In the lower section of the crankcase is placed the oil strainer.

Three bearings are provided for the crankshaft. There is an integral flange at the real end of the crankcase which carries the flywheel and also prevents oil leakage at that end. The connecting rod is an I-beam section with four bolts on the main-bearing end. Provision for adjustment is made by using laminated shims between the rod and cap.

The pistons are gray-iron and each has three expansion rings. No scraper rings are used. The valve heads are fitted to a seat having an angle of 45 deg. A camshaft, driven in the usual way by a spur gear, with a mushroom-type follower, actuates the valves. Separate bushings for grinding each valve and provision for adjustments through cover plates on the cylinder are included.

of extra large diameter which rotates on self-lubricating bearings. A flexible coupling at the end of the cross-shaft drives the impeller shaft. The water is forced through a manifold from the pump and travels to the lowest point of the water jacket, so that the water enters the spaces just under the exhaust valves.

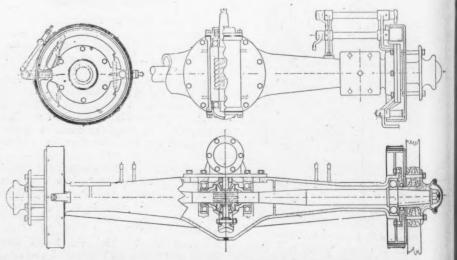
Ignition is through a high-tension magneto, the spark plugs being well cooled.

Lubrication is through an oil pump cast internal with the front bearing cap and driven by a spur which meshes with a gear on the crankshaft. The speed of the pump is slightly greater than that of the engine.

The connecting rods, bearings, valve guides, etc., are lubricated by splash, a

## Standard Worm-Drive Axle

The Standard Worm Drive Axle Co., Chicago, Ill., is placing on the market worm drive axles in two types. The type A is suitable for truck attachments for converting the Ford into a 11/2-ton truck. It has a payload capacity of 3000 lb., and allows for a liberal overload. This axle is equipped with one pair of brakes, as on these truck attachments the Ford service brake is used. In the Standard wormdrive axle is offered a product suitable for any type of truck of I or 11/2-tons capacity. High grade materials are used in these axles and the driving shafts are of 31/2 per cent nickel steel, heat-treated and accurately proportioned. The axle housing is a one-piece casting, sand-blasted. special steel worm is used and the wheel is of alloy bronze. All differential gears and pinions are nickel steel, heat-treated, with 7/8-in. face and 5-in. pitch. The differential spider has a 7/8-in. diameter arm, and is heat-treated. Self-contained, combined radial and thrust bearings are at each end of the worm shaft and high duty radial and thrust bearings are at each side of the differential and outer shaft ends. The worm and wheel, together with the differential are mounted as a unit on a one-piece casting which forms a cover for the case so that the worm and wheel, together with the worm shaft bearing, differential and differential supports, can be removed as a unit. Special felt washers are provided at all openings to prevent oil and grease from seeping out of the housing. The standard high gear ratio is 71/4 to I, while other reductions are optional.



Sectional Views of the New Standard Worm-Drive Axle

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## Highway Transportation Around Denver

Unusual Commercial Car Opportunity in West. More Freight Needs to be Handled Than Ever and There Are Railroad Cars to Do It

By CHAS. M. SMYTH

HIS is the year in which the motor truck will come into its own in the West. Labor shortage, unprecedented freight congestion, all business greatly stimulated by the demands of war, make the commercial car the only solution of the troublesome problems of transportation. The killing strain placed upon man and horse in moving raw materials and finished products from place of origin to point of use would soon prove too great for both, were it not for the motor truck coming to the rescue.

The country-wide freight congestion, which proved such a stubborn problem that Uncle Sam had to take a hand in an attempt at relieving it, is proportionately troublesome in the Rocky Mountain district where much of the raw material of manufacture is produced. The terrific demand for freight cars in

the East has robbed the western states of their usual quota of rolling stock, which hampers western shippers even more severely, if possible, than if they were located where freight cars could be got to them more quickly. These conditions coupled with increased business needs have thrown open to the motor-truck salesmen of Denver a field not previously enjoyed and one in which many truck agencies will wax fat through the disposing of all the trucks they are able to procure.

If Walker D. Hines, recently appointed assistant pro-tempore to Mr. Mc-Adoo, general director of all railroads, installs a short-haul embargo, as has been suggested as necessary, it will be the cause of all goods destined to be moved short distances, being eliminated from railroad haulage and the commercial car will be the only recourse.

Motor truck sales agencies in Denver have foreseen such a condition and have ordered ahead and stocked their sales rooms to the limit of their capabilities. The Swenson Auto Co., Denver distributors for the Republic truck, has at present between 50 and 60 trucks on its floors ready for immediate delivery. During November of last year they sold 43 trucks and in December, just past, 24 were disposed of. This firm is one of the largest in Denver and the only one of its nature in the city. It does a truck business exclusively and operates in connection with it a complete machine and repair shop for truck service. Mr. Swenson, manager of the company, reports that the volume of their business in 1917 increased \$10,000 a month over 1916.

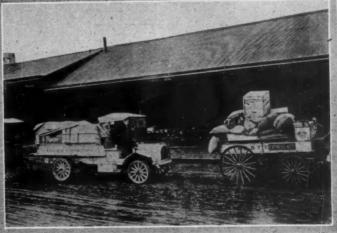
W. W. Barnett, distributor of Federal trucks, declares that his truck business

When Shipping Freight by Railroad it is Necessary to Carefully Crate and Pack Furniture and Merchandise, and Employ all Manner of Conveyances in



Transferring the Goods From Depot to Warehouse, With Its Added Expense of Numerous Handlings. Even Here the Motor Truck is Doing Good Service.





"In a Very Few Months There Will be a Shortage of Motor Trucks"





Left: Drays and Trucks Wasting Time, Waiting to Unload, at a Badly Congested Freight Depot. Right: Freight Train Blocking Roadway

has been four times as large in 1917 as that which he enjoyed during the previous year. He reports transportation problems more serious than ever before and believes the outlook for truck business in the present year to be unprecedented.

George W. Linger, president of the Linger-Goff Motors & Supply Co., which handles United States heavy-duty trucks, recently received a communication from Forrest J. Alvin, general manager of the United States Motor Truck Co., in reply to a late inquiry. It read: "Just as sure as this letter is being written you, in a very few months there will be a shortage of motor trucks and every large business firm, as well as smaller ones, will be demanding this product. In addition to other expenditures the United States Government will purchase from 80,000 to 90,000 motor trucks for war purposes, and it is the opinion of many competent authorities that instead of any possible uncertainty there really will be a premium paid for any

motor truck that is running, within the next six or eight months."

Johnny Norton, sales manager of the Norton-Buick Auto Co., distributors of GMC and Buick trucks, reports unprecedented success in disposing of trucks. He says there is no other argument as effective as the motor truck in compromising the transportation problem. He relates with pleasure the resourcefulness of W. J. March, agent for GMC and Buick trucks in Douglas, Wyoming, who recently had an order for a 31/2-ton GMC and a 1-ton Buick. When he came down to Denver to get them he found difficulty in procuring a freight car immediately. Instead of waiting he loaded the smaller Buick onto the big GMC and took them both overland a distance of 270 miles from Denver and delivered them to the buyer in perfect condition.

Railroad freight shipping conditions are radically different in Colorado than they are about Chicago, New York and kindred cities, because of the natural

obstacles to be overcome. Our rural towns are farther apart, farming districts less thickly populated, and the whole district differently affected by local and through tariffs. Many shippers of raw materials would endure absolute business privations were it not for their being able to resort to the commercial car. Small town merchants are likewise benefited by the assistance of the truck in bringing the finished products to them from main shipping centers where local freight cars are so difficult to procure.

They are eliminating frequent handlings of their freight and saving many long waits by resorting to the motor truck to haul their goods. Instead of wiring a request to a Denver distributing house to ship their order of goods by first freight and then waiting for the release of a car already overburdened with freight bookings, the new order of business is to send a truck direct to the wholesale warehouse where the order is filled and loaded upon the truck. The





Denver Creameries Use Motor Trucks Instead of Paying Railroad Charges and Expense of Handling Cans From Depot to Pasteurizers

The new order is to haul the milk by motor truck from the farmer direct to the city distributing station

material does not have to be so carefully wrapped and packed as when shipping over the railroad, and is not unloaded or handled again until the auto pulls up to the door of the merchant in the small town 20, 30 or 60 miles from the warehouse. Instead of waiting days for his goods he gets his merchandise in a few hours.

While it cannot be claimed that he

has saved any cost by the new method of handling his wares, the commercial car can surely be credited with showing him a new light in the way of freight transportation that will likely revolutionize his future business. The channels through which he orders his freight by truck here in Denver are various, of which one is about as effective as another. Any one of several moving concerns will fill his order; or he may order through individual truck owners who have contracts for hauling milk from the outlying towns to the large creamery and milk distributing firms in Denver. They bring in their daily cargoes of milk and cream and return with loads of freight to anyone who wants it. This is robbing the railroads of no business-in fact, the railroads are glad to be rid of the troublesome short-haul orders while the prevailing congestion continues. The creameries eliminate the



"Johnny" Norton, of Norton-Buick Auto Company, Denver, and W. J. March, of Douglas, Wyo., Beside GMC Truck That Hauled Buick 270 Miles From Denver to Douglas

The Duffy Moving & Storage Co. is also doing considerable grain and farm product hauling besides its moving of country household goods.

Individual instances of accomplishments of motor trucks and of the success of Denver truck distributors and salesmen might be continued indefinitely, were space unlimited, but enough has

to be rebuilt next Spring. When the present roads were built, it was never thought that they would have to support such an immense tonnage as is now passing over them daily.

If the increases indicated by this survey continue for the next few years, especially in motor truck traffic, the highway problems in Pennsylvania will





On the Left is M. T. Skinner, at the Wheel of His New Republic Truck, Which He Almost Paid for in One Contract of Hauling Over Eight Thousand Bushels of Wheat; and on the Right a Three and a Half Ton GMC Truck Belonging to Duffy Storage & Moving Company, Denver, With a Five-Ton Load of Feed.

handling of the milk cans between the railroad station and their pasteurizers and the farmer does not have to haul the cans to and from his local station as the trucks pick up his milk at his farmyard gate. The motor truck owner gets the same price as the railroad for milk and freight hauling and in most cases makes a comfortable profit.

M. T. Skinner, a local freighter of Longmont, Colo., recently contracted to haul to a Denver grain elevator some 8,000 bushels of wheat located about 12 miles from a railroad and with a 22-mile haul to Denver. He had barely begun upon the task with teams and horses when he was convinced he would be unable to move the wheat in the specified time. To keep from losing the contract he purchased a 2½-ton Republic truck and finished the task well within the time limit and almost paid for the truck with the one contract.

been shown herewith to convince the most skeptical that the expansion of commercial car usage has no more than started, and what the future holds for the business here in the West is written in bold letters.

## Roads Must be Better Kept

The following statement from the office of the Pennsylvania State Highway Department is a significant prophecy of what may develop all along the line of the Lincoln Highway from the Atlantic Coast to the Missouri River at no great distant

The heavy traffic on state roads, particularly that on the Lincoln Highway, by the enormous freight trucks now running, has already started to play havoc with the highways. In certain sections this important route has begun to break and will likely have

assume such proportions as to dwarf many other big questions with which the Commonwealth has to contend.

J. Denny O'Neil, Pennsylvania State Highway Commissioner, is authority for the statement that roads needed for war emergency purposes in relieving the railroads of their over-burden of traffic by the use of motor truck freight trains will have the attention of his department almost to the exclusion of other forms of construction.

Commissioner O'Neil is now making a trip of inspection over the main thorough-fares of the state to gain first hand information concerning the more pressing needs in the way of improvement. He has already covered sections of the Lincoln Highway in the state and will continue his trip into southern and western Pennsylvania

## Motor Truck vs. High Cost of Living

By H. WEYSZ

HE value of the commercial car as a means of reducing the cost of living is rarely appreciated.

Small and medium sized motor trucks offer an extremely economical means of quick transportation over limited distances, especially valuable where the goods to be handled are perishable and where their delivery depends on promptness of transportation. In this class of merchandise are different kinds of food, for example, garden and dairy products -the kind of food that is usually raised near the big cities. Quite a few large and small food producers have already seen the possibilities of motor trucks in this respect and have increased their profits as a result. This phase of the food question will be dealt with later; but first attention will be called to a different plan whereby the consumer-constituting as he does the majority of the public-can be benefited materially.

In different large cities, both of this country and abroad, consumers have organized for co-operative purchasing of their food direct from its producers. This practice was specially popular in England, Germany and Italy even before the war; while at the present time the food distribution there is regulated direct by the govern-ments of these countries. The consumers' organizations contracted with certain farmers for their output of food and having purchased it, transported it from the place of production to the companies' stores. Societies of this kind counted many millions of members in the above-mentioned countries several years ago. In America this practice has not become so popular as yet, although the principle of direct dealing between the store and the farmer has been popularized by the use of motor trucks. A number of grocery companies in large American cities obtain their goods in this way, getting them cheaper, although paying the seller a better price.

#### Quick Transfer Means Cash

Some large farming enterprises, or rather truck gardeners, in the neighborhood of New York and other American cities have also organized grocery stores where their vegetables are sold, frequently at a price somewhat below the average. In this way the produce brings immediate cash, while the elimination of the middleman enables the gardener to obtain a better price than he could were he to sell his vegetables and fruit to a dealer. Some truck gardeners and dairymen have combined to conduct city stores, where absolutely fresh products are sold at comparatively reasonable price, and by keeping a small or medium sized delivery car they have increased their gross earnings from 15 to 20 per cent., while the gain in net profit is even greater. Moreover, an as-

sured market was thus built up for the farm and garden output.

Take the case of a Long Island gardener, who determined to become independent of the middleman. His vegetable production brought him about \$5000 a year, of which a little more than half composed his "salary" and profit-salary, as he himself put a great deal of hard work into his little vegetable farm. He considered buying a truck-a small one-and delivering his produce direct to some New York store. But a machine costing about \$500 and requiring a man's labor for about 31/2 hours to the round trip seemed too expensive. After thinking the matter over he arranged with a neighbor who ran a small dairy farm to pool resources and deliver their output to a large metropolitan grocery. A bright young farmhand was chosen to operate the truck, receiving \$1.60 a trip, in addition to his wages. The plan worked very well, inasmuch as the vegetable raiser's profit, after the full expense of running the truck was deducted, increased about \$550 during the first year. The dairyman's increase was even a little more advantageous. In consequence of this experience they opened a little store of their own in New York during the following year, with a combined net profit of \$2300.

## Farm to Hotel Idea Profitable

Another farmer of the same Long Island section hit upon the plan of delivering his products to an almost unknown, modest city hotel. An arrangement was arrived at whereby both parties profited neat amounts. Spurred by his success, the farmer soon affiliated with a number of less enterprising members of the community, who pooled their products under his leadership, whereupon he began to put this plan into operation with a chain of New York hotels. This man, though he himself cultivates no more than 12 acres, is now earning from \$15,000 to \$18,000 a year—due to his farming and business sense.

Here is another plan actually in operation and developed by a grocer in New York. His store is supplied three times a week, by a delivery car from a nearby Jersey village, the grocer having made an arrangement with a small farmer who raises vegetables and also owns a little barnyard. The farmer is, by this arrangement, assured a steady market and sells his products at considerably more than he could were he to dispose of them to a wholesaler, while the grocer's saving is almost as great. The store has an ample clientele and business is so easy that the owner can afford to close up and go home each night at 6 o'clock. By selling at prices not very much below the average market, yet enough to make it worth the housewives' while to patronize his place, this grocer has built up a well-paying business

and freed himself from the eternal worry which is the lot of most small business men, while his customers deal with him in a friendly rather than a commercial manner.

There is no reason why such plans should not be duplicated again and again. The spirit of co-operation which is more evident today among our farmers than ever before should make it easy for them to combined and sell their output on the basis of dividing profits pro rata.

But there is one difficulty standing in the way of the general introduction of such a scheme of things. Farmers are essentially conservative people, not accustomed to look at their occupation in a scientific way, or to do business methodically along modern lines. They can easily see the advantages of up-to-date machinery and implements, but they will not as readily listen to commercial advice. A little applied psychology, however, should be able to overcome such a handicap slowly, but surely, and by calm sound argument the shrewd farmer's mind can be made to see the merits of a system whereby one link in the chain between producer and consumer is eliminated and the profits of all other parties enhanced, while at the same time a line of anxious consumers waits for food sold at a fraction less than the market

The task of the motor truck dealer attempting to interest the small farmer in a proposition of this kind, with a view to selling one of his commercial cars, is to show, by figures that are thoroughly in accord with local conditions, that the right truck, rightly used, will be a money maker for the farmer.

#### The Farmer Must be Shown

At present the figures given below are fairly applicable to the situation a farmer has to consider if he lives about 30 miles from the city to which he wants to send his products by motor car.

Each trip—to and from the city—will amount to 60 miles, and a light delivery can easily make such a trip on 4 gallons in about three hours. It is assumed that one of the farm workers drives the truck, and that he is paid a special wage of \$1 a trip (an additional remuneration is usually not necessary, as most hands would rather run a motor car than stay at home).

If a small car, costing about \$600, is properly cared for, it will be serviceable for six years, so that the equipment cost per year, including depreciation, can be assumed to be \$100. Add to this \$50 for tires' and occasional replacing of parts—repair work may not cost anything, as there are almost always handy men who can do the work and will do it without extra pay—and we arrive at the yearly cost of the car, \$150.

Thus the total cost of the operation of the truck for a year figures as follows:

Depreciation on the m	achine	\$100
Tires, etc		
Wages, \$1 a trip on	150 days in the	
year		
Gasoline, 4 gal. to the		
cents		156

The average cost per trip, therefore, is \$3.04.

It is true that the truck only needs to work part of the year, but the work of the farm itself is also limited by the season, so that if the truck renders service during that time only, the wage and fuel items are correspondingly reduced. The difference will more than make up for the additional expense items not considered in above calculation, such as lubricants, patches, etc.

Most farmers within a radius of 30 miles from the city can work a small car, if they handle it with a fair amount of care, at a cost of \$400 a year.

Now, taking a farmer whose land is planted with vegetables and who sells it ordinarily, for \$4000 a year, or who raises some poultry and sells eggs, can easily increase this amount 20 per cent. if he takes his products to the city instead of to the railway. This means an additional income of \$800 gross, and an increased net profit of \$400 a year, after deducting the cost of running the truck. Very often it will be possible to either operate the machine together with a neighbor, so that the cost is cut in half, or to handle another man's

products for him at a reasonable price. Both methods will make it possible, without extra expenditure, to cut down the truck expense to \$200 to \$300 a year, leaving the balance of the \$800 as net profit.

It will be thought that relatively few farmers produce \$4000 or even \$3000 worth of stuff, but this is erroneous. There are, near every large city, many hundreds of truck farmers who make considerably above these amounts each year, and yet continue to sell in the old-fashioned way, to their own disadvantage as well as to that of the general public. Among these farmers there is a very large field for motor trucks with a capacity of 500 to 1500 lb., if they are shown how a good profit can be obtained from the investment necessary to purchase the machine.

## Place of the Motor Truck as a Typical User Sees It\*

By ARCHER WALL DOUGLAS

THE first use and conception of motor trucks was largely for comparatively short hauls in large cities where both speed and tonnage capacity were desired. Experience soon developed the unexpected fact that compared with the horse they were uneconomical for short hauls where they were not in constant use. Nor was it profitable to employ them where there were long waits between the hauls, since the investment was unproductive capital when the machines were idle. That is why some firms had to abandon them and go back to the horse-drawn vehicle.

Where long hauls were combined with large tonnage to be transported, with the machine constantly in action, the motor truck was found to be by far the most efficient and economical means of transportation.

They soon became familiar as transporters of merchandise from the large cities to the suburban towns, not only from manufacturers to their customers, but from large department stores in the city to the suburban shoppers. The limitation as to their usefulness for such purposes was soon found to be the nature and quality of the roads over which they traveled, for the ordinary gravel roads, no matter how well built, were entirely unsuitable for this kind of traffic.

The weight and speed of the motor truck practically tore the road to pieces where their traffic was heavy and continuous. Solidly built roads, with good foundations and hard surfaces were the only highways which were enabled constantly to withstand them.

In the states of New York, New Jersey and Pennsylvania, brick roads increased from 385 miles in 1915 to 626 miles in 1916. Experiments are constantly being made with new substances as suitable top dressings for roads, which shall render them capable of withstanding motor truck travel.

In Northern Ohio for instance, especially around Toledo, there are most excellent roads with hard surfaces that seem practically indestructible. Naturally it follows that the number of motor trucks is greatest in those states which have good roads.

By far the most valuable use of motor trucks in the future will probably be that of relieving the congestion of the railroads in moving freight up to distances of 100 miles or so. Very much has already been done in this direction by the interurban trolley lines, especially in the way of local shipments in less than car lots. In many cases the railroads are glad to be relieved of a business of this nature, which under present conditions they cannot handle expeditiously and economically.

## Mobility of Trucks Limited Only by Nature of the Road

The trolley lines are limited in their distribution to the towns and cities on their lines, and to the possible amount of traffic which can be hauled by their equipment and often on a single track.

Motor trucks have none of these handicaps and limitations, and their mobility is practically limited only by the nature of the road over which they travel. They can go wherever sufficiently good roads are available, and over hard surface roads that are not handicapped by unfavorable weather. They are free from expensive investments on which dividends have to be paid, nor do they need costly terminal facilities.

Their mobility and their ability to go almost anywhere must be their great recommendation, and to this must be added the small likelihood of delays in delivery, since a breakdown in machinery or some accident to the machine are practically the only dangers to be apprehended. There is no common catastrophe which can happen to them all, such as the broken rails or wrecked trains of railway and trolley traffic.

Their principal appeals for business must naturally be not only economy in transportation, but prompt and efficient service, and in the latter prerogative they should make hard competition for the steam railway and the electric trolley. Their province, at least for the time being, will be within a certain number of miles haul, say, 100 miles, within which space they should do an increasing business.

The great increase in their numbers within the past three years, shows the hold they are taking upon the freight business. Probably they will in time absorb much of the short haul distribution now done by the railroads, which will probably find that they cannot hope to compete with the motor truck for such local traffic.

Their ability to extend this distance will depend almost entirely upon the possibility of greater power to be obtained from gasoline, or such increase in the effectiveness of their machinery as will answer the same purpose.

As carriers of freight for comparatively short hauls they came most propitiously at a time when it is evident that railroad facilities are inadequate for the prompt, efficient and economical handling of the business that is offered them, and when there does not seem any immediate likelihood of the railroads being able to finance their requirements for new facilities and equipment.

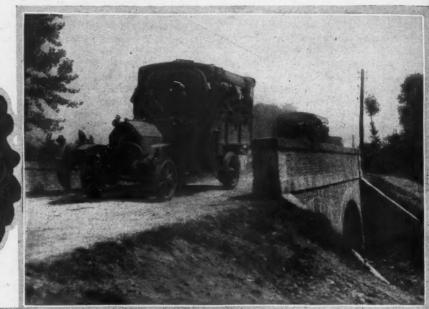
So the motor truck may prove to be one of the solutions of a problem which at present now seems so difficult and forbidding.

That the motor truck may help solve the transportation problem is the belief of the general munitions board of the Council of National Defense, which says: "More and more the motor truck must be used for local deliveries of freight, not only between the plant and freight assembly station, but to consumers at relatively nearby points. This will mean, in many instances, the organization of a joint motor car service by the manufacturers of a given district to insure as nearly as possible full motor truck loads for each trip."

<sup>\*</sup> From "Factory" for December, 1917.

# Some Views of the Motor Truck Abroad, Showing a Few of Its Tasks in the Present War







Upper Left: Train of Ambulances Going Through the Woods. Upper Right: Transportation of Fresh Troops in Motor Cars to the Trenches on the Italian Front. Center Left: Trucks With Ammunition on the Way to Maurepas, Where the Fight Has Been Fierce Lately. Lower Left: Machine Guns Hidden and Waiting the Attack. Lower Right: French Motor Trucks Bringing Up Supplies to the Front-Line Trenches in Macedonia. Day and Night a Steady Stream of Motor Trucks Travel Back and Forth on the Macedonian Front, Bringing Supplies to the Soldiers.







## Motor Truck Design and Construction Made Plain

Advantages and Disadvantages of Different Types Discussed

By C. T. SCHAEFER, Member Society Automotive Engineers

This is a series of articles by this well-known writer, covering in a non-technical way, the various constructions now current practice in commercial car design. Preceding articles covered General Types of Chassis, Two and Four-Cycle Engines, Types of Cylinders and Their Parts, The Valve-Operating Mechanism and the Crankoase, Engine Lubrication, The Engine Cooling System, Carburetion and Carburetors, High-Tension Magnetos, Low-Tension Magnetos and Battery Systems, Industor Magnetos, Governors and Speed-Controlling Devices, Clutches, Universal Features of Design, Transmissions, The Universal Joint and Differential, The Final Drive, Front and Four-Wheel Drives, Brakes, The Front Axle, The Steering Gear, The Frame, Power Plant Arrangement and Its Mounting, Springs and Suspension, Motor Truck Wheels, The Muffler, The Fuel Supply System, Controls, Tires, Rims, and Steering Mechanism. The Care of Motor Truck Tires, Electric Lighting and Starting on Commercial Cars.

## Power Plant Mountings PART XXX

AN interesting problem in connection with commercial car designing which merits careful consideration is that of mounting and arranging the power plant so as to protect it from stresses caused by frame weaving, due to road irregularities. Vibration is another factor of considerable magnitude that must be considered, while provision must also be made for torque reaction.

Power plant mounting is being freely discussed and there seems to be a general tendency toward some form of flexible support, so that sufficient freedom is given the engine, while others resort to a spring mounting, which combined with a flexible support, protects the power plant from vibration and frame weaving.

Opinions differ greatly as to the correct mounting, some maintaining that the usual method of bolting down the two rear engine arms rigidly to the side rails of the frame does not give the engine sufficient freedom, even if a flexible support is provided at the forward Others take the opposite view, claiming that the front flexible support is sufficient. There are also some engineers who claim good results can be obtained by a rigid central support at the front end, as this practically gives a three point support, and permits frame weaving to be taken up by the cross member which supports the forward end of the engine.

The material give of the cross member should absorb severe stresses and also hold the engine more rigidly against torque reaction.

If the engine is mounted with a pivoted support at the forward end, the torque reaction caused by an explosion in the front cylinder, must be transmitted through the crankcase to the rear

engine arms before it reaches the frame. However, if the forward support is of the rigid type, the stress goes to the frame direct.

In addition to the flexible front support, some makers also provide swivel supports for the rear arms, so that all the torque reaction must go to the rear arms, but no frame distortion can by any possibility put a stress upon the crankcase. Larger and more massive engine arms are also being used, thus increasing the efficiency of the present mountings.

Coil springs of considerable strength are also used under the front or rear supports, and these absorb some of the porting arms can be quickly freed when it is desired to remove the engine from the chassis.

In the unit power plant the transmission is supported from the flywheel housing, but in the amidship position, it is usually mounted on a three point support, so that it has a certain degree of flexibility to resist frame weaving. In some cases where a flexible subframe is used for the motor, this is also arranged to support the transmission. For midship mounting, cross members of the frame are usually used, so that the forward support forms the flexible member, while the rear carries the two rigid supports.

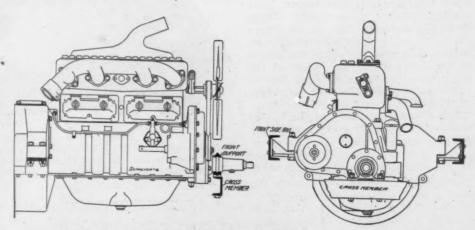


Fig. 1. A Prominent Type of Flexible Support, Which May be Adapted to Either the Engine or a Unit Power Plant

stress created by frame weaving, while they can also be arranged to absorb some vibration.

An important point with a rigid mounting is the method of securing the rear arms to the side rails of the frame. In this case, the engine must be held securely, and the frame must not be appreciably weakened, while the arrangement must be such that the sup-

One of the most prominent types of flexible supports is shown in Fig. 1, which may be adapted to either the engine or a unit power plant. This particular illustration represents the Globe 1-ton truck, equipped with a Continental engine. In this construction two cast arms integral with the flywheel housing, form the two rigid points of support. These are set on hangers, riveted to the

side rails of the frame, while bolts pass vertically through both, to hold the power plant in position.

The third point of support is at the front end of the engine, and consists of a bracket fitting over a finished surface, on the hub extension of the gear cover plate. A cross member passes under this, and has the bracket fastened to it by two bolts.

This engine is also used on the Denby trucks, and is mounted in a similar manner, but in order to provide more flexible rear supports, one bolt on each side is fitted snugly and provided with a coil spring the others being a loose fit.

Another type of three-point mainframe mounting is shown in Fig. 2, being employed on the Riker commercial An interesting and simple method of support is used on the Union trucks, Fig. 3, which is covered by patent. The forward support is of swivel type, consisting of a bracket fitting over a hub extension of the timing gear cover. This bracket has two lugs which rest on the upper flange of the cross member, so that the weight is taken off the bolts that hold the bracket in position.

The rear support is a large cast member bolted to the flywheel housing, which has a trunnion formed on each side, and these fit into brackets, that in turn are bolted to hangers riveted to the frame side rails. This gives the engine somewhat greater freedom, and permits taking the torque reaction on the rear member.

The Signal truck has an unusual engine mounting, Fig. 4, which is also covered by patent. In this construction, swivel supports are also used on the rear arms, for with such a layout the torque reaction must all go to the rear arms, but no frame distortion can by any possibility put a stress upon the crankcase. A bracket developed into spherical shape is bolted to the arms extending from the flywheel housing and supported by brackets bolted to the frame members. The forward support is of the pivoted type, similar to the Riker, having a drop-forged member that is supported by coil springs and brackets attached to the frame members. A long stud supports the springs above and below the frame brackets, so that the springs relieve the engine of severe shocks and vibration.

The Diamond T trucks also have a swivel rear support of the ball-and-socket type, and the front support is of the pivoted type, supported from a channel section cross member, which is also used to support the radiator.

The method of mounting the engine in the United States motor trucks is illustrated in Fig. 5. The engine is mounted on a sub-frame, the front cross member of which extends into the side members of the frame. This cross member has ends that form a yoke into which are placed heavy coil springs, retained by a long bolt, passing through

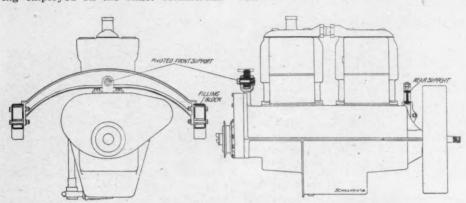


Fig. 2. A Three-Point Main Frame Mounting Employed on Riker Trucks

cars. In this construction, a heavy drop forged member is attached to the crankcase at the rear by studs, which pass clear through the case. These studs are so close together that considerable freedom is obtained by this supporting member, through the elastic extension of the studs, and the elasticity of the forged member. The forward end is also supported by a forged member; however, this is pivotally arranged in a bracket bolted to the crankcase. Metal filling blocks are fitted into the side rails of the frame, and three bolts in each end of these supports secure the engine to the frame. The top flange of the supports overhangs the filling blocks, and so relieves the bolts from the weight of the engine.

The Pierce 5-ton truck engine is also mounted in a similar manner, while the Packard truck engines have a pivot mounting at the front end, and the rear end is supported by a large member which is bolted to the flywheel housing.

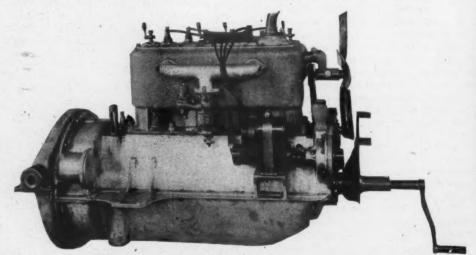


Fig. 3. Simple Method of Support as Used on the Union Trucks

The forward support is a swivel consisting of a bracket fitting over a hub extension of the timing-gear cover. Two lugs extending from this bracket rest on the upper flange of the cross member. The rear support is a large cast member bolted to the flywheel housing.

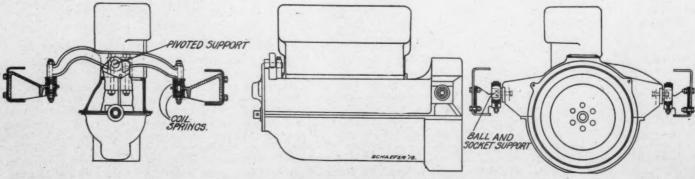


Fig. 4. Three Views of the Patented Mounting on the Signal Truck

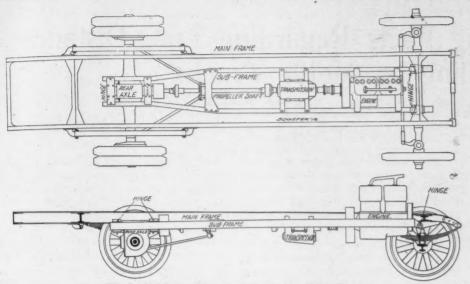


Fig. 6. Subframe Arrangement Used on Blair Trucks

is the United States mounting, Fig. 5, in which spherical or ball-and-socket joints are used at three points, one at the forward end, and one at each side in the rear over the jack-shaft housing.

On the Packard trucks the transmission, Fig. 7, is supported by two pressedsteel cross members. The forward end is bolted to a cross member, which has a machined surface that fits over the housing, which supports the forward or main shaft of the transmission. The rear end is free and pivotally mounted in the brake anchor, which is attached to the cross member.

On the Federal truck a modified 3point support is used. The transmission case has four lugs, two at each end, and these support the transmission case, being attached to two cross members. The two lugs at the front are close together, and practically produce the same effect as a single point.

a bracket riveted to the frame, thus utilizing the springs to absorb severe shocks and vibration.

A 5-in. spherical bearing riveted to the rear of the sub-frame forms the rear support. This rests on a large cast cross member, which is dropped considerably at the center. The support is on the upper side of this cross member, thus providing a very flexible mounting.

The principle of 3-point suspension in the Blair trucks, Fig. 6, is even carried on to the rear axle. In this construc-

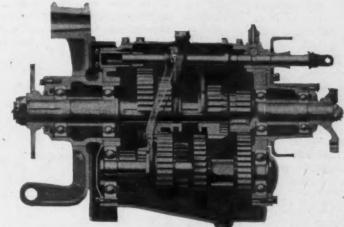


Fig. 7. Method of Supporting the Transmission on a Packard Truck

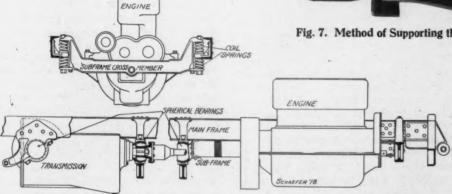


Fig. 5. Another Subframe Arrangement as Used in the United States Trucks

tion the sub-frame is hinged to the main frame in front by steel castings and heavy hardened and ground steel pins. At the rear it is hinged at right angles to the worm-drive-axle housing. It is claimed that this system renders the sub-frame that carries the power plant flexible to any position, maintaining

perfect alignment in the transmission of power. It provides a straight-line drive under all conditions, and almost entirely eliminates universal joints in the drive.

Flexible mountings are also applied to transmissions when these are located amidship. An excellent example of this Three-point support is also used on several other trucks, the forward support being of the pivot type while the rear is either directly mounted from a cross member or by brackets attached to the transmission.

The advisability of providing a long life for the power plant will be endorsed by all users of commercial cars, and since this feature can be accomplished with little added expense, it would seem to be a step toward reducing maintenance cost. There are very few makers at present who do not provide a certain degree of flexibility in the mounting of their power plants.

These few contended that there is little to be gained through this feature; however, it is not to be denied that for commercial cars, this feature presents several advantages.



Have you organized a Return Loads Bureau in your city? If you haven't, get busy at once; it will help the Government and yourself



## Some Interesting Facts Regarding Long-Distance Hauling by Motor Trucks

The following address was delivered by Mr. Beam at a recent meeting of the Motor Truck Club of Philadelphia. Besides having the courage of his convictions, Mr. Beam has had a varied and interesting experience in this field

By PERRY E. BEAM

HAVE been asked to talk on long distance motor truck hauling and I hope to cover the principal phases of my subject by frequent reference to actual experiences, in fact, a brief outline of my experience in motor truck hauling, as this line of endeavor is in its infancy and I have been able to obtain very little accurate data from other sources.

Before commencing on the present status of long distance hauling, I will ask you to follow me to the Pacific Coast—to Portland, Oregon, and commencing with the advent of the motor truck in that city in 1909—to Philadelphia in 1917.

It is curious how trivial things often changed me from a provisional broker to was simply because a friend of mine at luncheon was lamenting his purchase in an over enthusiastic moment of about fifty touring cars more than he could sell that changed me from a provisional broker to a motor truck operator. My suggestion that he put light delivery bodies on them led to the organization of an automobile parcel delivery company and I was selected as manager.

My entire knowledge of the business was purely theoretical—and I might add that my theories suffered rude bumps frequently, but we profited by experience, and because of the unexpected promptness of delivery and the dependability of the little car, success followed us.

It has proven interesting to many of my friends to hear how the business developed so rapidly—how we branched out in other lines of hauling—where invariably, whenever we tried a motor truck in a new field, the same old phrase was used, "It can't be done," and with your forbearance I will tell you how it was done.

In Portland all cement comes by boat from Southern California and is landed on docks of the Williamette River. The manager of the largest cement dock was having his own troubles in delivery cement with teams and was so positive that a three-ton truck would be profitable to us and offer a partial relief to his trouble that we ordered one—the first to arrive in that city for the use of the general public.

To enumerate the troubles encountered would take too long. At first we were greatly hampered by teams blocking the runways to and from the docks—in most cases purposely—but we overcome that difficulty only at night, by arranging with the big paving and building contractors to receive at night. It was better for them and they were saved the annoyance and delays of daytime delivery teams.

The demand for night delivery increased so rapidly that we were compelled to order more trucks to meet it. Within three months from the time we started four three-ton trucks-upon which we were hauling five tons each-were delivering from 8,000 to 10,000 bags of cement, 400 to 500 tons, every 24 hours. This was done by working the trucks two II hour shifts, and by obtaining the highest efficiency from drivers and helpers in loading and unloading. One entire section of the dock was turned over to the use of motor trucks exclusively. By adopting a body suitable to the work and paying bonuses to the men, we were able to load 100 bags in an average of 41/2 minutes, and unload in 21/2 minutes, as against a teamster's time, 35 to 40 minutes to load 60 bags, and the same time to unload. Thus we had an advantage not only in running but also in loading, and were soon handling 80 per cent of the cement used in paying and concrete construction

### Motor Trucks Used as Result of Teamsters' Strike

Hauling steel for "sky scrapers" by motor trucks was brought about by a teamsters' strike. The superintendent of a well known eastern contracting firm had found such a strike on his hands shortly after the arrival, of some fifty iron workers and erectors which he had brought from Chicago at a heavy expense. He sought relief from us but it at first appeared hopeless to haul 30 and 50-foot girders weighing from 6 to 9 tons each on a three ton truck. It was finally agreed that we would try to tow heavy wagon trucks upon which the steel was loaded if he would furnish the wagons, it being an easy matter to get them quickly, as 10 and 12-ton logging trucks are widely used in that section. Our very first attempt was a grand success, and by using three wagons, so that the trucks would not delay in loading or unloading, we were able to move an average of 108 tons a day, a distance of 5% of a mile.

These successful results of trying out new fields of hauling led us into what was then considered long distance hauling—distances of 10 to 25 miles—but the field there was limited for such work. Two years later, however, while operating a fleet of 22 five-ton White trucks in San Francisco, we were awarded one of the largest contracts for long distance hauling that had ever been undertaken, according to available statistics.

The General Pipe Line Co. advertised for bids hauling all material to be used in the construction of their proposed 6 in. oil pipe line running from the oil fields

about 30 miles from Bakersfield to tide water at San Pedro near Los Angeles, a distance of 168 miles, crossing two mountain ranges and the Mojave Desert. The delivery of the pipe together with the 12 pumping stations of about 2900 tons each made a total haul of approximately 770,000 ton miles—equivalent to hauling one ton about 30 times around the world.

When the bids were opened and it was found that we were low bidders, they thought we were joking and at first refused to award us the contract, claiming "it couldn't be done with motor trucks" as much of the material had to be hauled fifty miles across the desert.

Finally succeeding in convincing them-28 more five-ton White trucks were ordered and the work was started. Everything went along fine at first until a freight handlers' strike in Chicago tied up shipments of pipe line material and also our new trucks. When the strike was settled solid train loads of pipe and pumps came on us like a flood but no trucks. One hundred and three carloads arrived at one station in 48 hours-filling all available sidings, thereby making it impossible to unload onto the ground because there was no vacant trackage to shunt cars around on. Demurrage in big letters stared us in the face and the only answer to that bug-aboo was to get teams for this station and get them quickly, trusting to our trucks to take care of the balance of the line. Within 72 hours we had 785 head of mules and horses together with the necessary wagons, on the ground.

To those of you that have never been West, let me explain that our teams consisted of from 8 to 28 animals to the outfit—known as 8 ups—12 ups—16 ups and 28 ups—and were driven with only one line, usually a light rope or sash cord attached to one of the leaders, the guiding being done entirely by jerking, once to the right, twice to the left, and by loud or boisterous swearing.

Though my subject is long distance hauling by motor trucks let me tell you a little of what long distance hauling by teams means. The maximum haul from this station where the teams were used, was 38 miles, and because all feed had to be hauled from the railway station and water hauled from 6 to 20 miles, it required 173 animals to haul feed and water for themselves and the other 612 head, while they were away from headquarters. Ten per cent of the total was laid up continuously for shoeing and the necessity of giving each animal one day's rest between trips, which usually

took from four to five days. Under these conditions, terrific heat and deep sandy roads, the average load hauled by each animal was about 1200 lb., and the distance covered per day was 18 to 10 miles.

At other points along the line our trucks were making good beyond expectations, and especially on the haul from Lancaster sidings, from which place thousands of tons of material had to be hauled across the desert to the line, a distance of 58½ miles. Fifteen of our fleet were concentrated at this point and nothing was left undone to push the work to the limit. By following railroad operation tactics and disregarding time of day, we were able to make an enviable record.

## Trucks Are Examined Carefully After Long Trips

As an illustration, the average time for the round trip of 177 miles was 131/2 hours. Immediately upon its return, regardless of the hour, day or night, the truck was taken in charge by an inspector, grease boy and mechanic's helper. If it required repairs beyond slight adjustments a mechanic was put on the job. The grease boy thoroughly oiled and greased it and the mechanic's helper tightened all nuts, bolts and screws. when this work was finished it was turned over to the loading crew and as soon as loaded, morning, afternoon, or midnight, a driver was called-the first one in-and started out. Upon his truck was a lunch, ten gallons of water and sufficient oil and gas for the trip. For one third of the distance the roads were terrible, mostly deep sand, and in some places there would be a mile or more of continuous low gear work -this in spite of the fact that we were using a 20 per cent lower gear ratio than the standard gear that came with the trucks.

Our mechanical department, consisting of three mechanics and two helpers, was well fortified to meet the heavy requirements of the severe strain on the trucks. In addition to a portable machine shop they had several thousand dollars worth of parts, such as one dozen radiators, two extra engines, two complete transmissions, two differentials, two magnetos, two wheels, forty solid tires, and several of each different kinds of smaller parts, as we were over 3,000 miles from the factory, and delay of even a day was very expensive.

Our average percentage of efficiency of days operated of the entire fleet of 15 trucks on this part of the work for a period of seven months under these severe road conditions and a continuous temperature of 110 to 137 degrees with no shade at all, hauling an average load of 8890 lb., was 87.6 per cent, which was considered a remarkable performance for motor trucks in 1912.

#### Up to the Bodies in Quicksand

We had our troubles, big and little, every day, but the worst shock of all came about in the most unusual manner. After spending nearly \$10,000 in building a road of eleven miles along the precipitous bank of a small stream in the heart of the mountains, in order to deliver material for a pumping station, the second truck, which attempted to make the trip, was dropped into the creek, because the blasting had

weakened that part of the roadway and it gave away. The creek was only a few inches deep but the bed was quicksand, and it was a most difficult job to recover the truck; however, it proved a fortunate accident for us. After sufficient planking had been laid to enable it to back up stream a few hundred feet where it could be lifted onto the road again, the driver was instructed to proceed slowly, which he did not do. Instead, he backed off of the planks but to our surprise kept on going instead of sinking out of sight. It was found that the sand would support the great weight by keeping it moving, and this discovery enabled us to use the creek for a road instead of the one we had just built, eliminating several heavy grades. I might add, however, that once one of the drivers ran out of gasoline on the way down and there were ten more trucks behind him in this creek, all soon buried to the bodies.

As a comparison of hauling by team and motor trucks on this 117-mile trip, I offer the following. A 12 up, or team of 12 animals, required six days to make the trip, hauling 9000 lb. of freight and 3000 lb. of feed as against a truck hauling the same load of freight and making from 6 to 8 trips in 6 days. Thus one truck did the work of from 72 to 96 animals.

#### Trucks Versus Mule Teams

On the entire line of 168 miles our 785 head of mules and horses hauled the material for 38½ miles of line, and our 22 fiveton trucks finished the balance of 129½ miles. The engineer's estimate on the time for completing the work was 18 months. In 7½ months from the day our trucks reached the job they were pumping oil from oil wells into steamers at tide water, and it was made possible only by the use of motor trucks and a well trained organization.

The hauling of high grade ore in 1913 from Mogolon to Silver City, New Mexico, a distance of 95 miles, and mine supplies on the return trip, was another long distance haul that proved the value of the motor truck and tested the mettle of men. On this haul the Great Divide was crossed at an elevation of 7,000 feet, and for several miles on each approach the road consisted of nothing but shale and rock-in some places being covered by loose pieces from the size of a marble to as large as one's head-in others being bare and smooth with an occasional jagged edge sticking up just high enough to cut the tire to ribbons. Five round trips, or a distance of 1,000 miles, was the maximum life of rear tires, and frequently two round trips finished them. Of course, the ore was very high grade or it could not have stood the hauling charges of \$45 a ton.

The round trip was made in from 22 to 28 hours continuous running with an exchange of drivers at the half way point. It proved so successful that the mining company refused to renew the three months' trial contract, and bought trucks themselves.

About one year ago the Beam-Fletcher Corp. placed in operation its first five-ton motor truck in Philadelphia. Shortly after we began making trips to distant cities by special arrangement and after many test trips between Philadelphia and New York City we inaugurated a daily motor truck ex-

press service last September, running trucks in both directions every day in the week but one, maintaining schedules as rigidly as railroads, regardless of the quantity of freight to be carried, and many times it could have been carried in a one-ton truck.

A campaign of advertising and the addition in October of our own receiving station in New York at 182 Washington Street, stimulated shipments to Philadelphia to such an extent that we are now running several trucks loaded to their capacity in both directions daily.

I cite these facts simply to show the rapid growth of long distance hauling by motor trucks engaged in daily express service between two large cities. The fact that we have been able to maintain our daily schedule with the one exception of October 14th—following the most severe December blizzard recorded in New York in forty years—demonstrates what can be done with dependable motor trucks and a highly trained organization.

#### **Good Operators Are Scarce**

It is needless to add, however, that the path of the operator of a fleet of trucks engaged in this kind of work is not strewn with roses. It has many pitfalls.

Our early experience led us to believe that it was easier to climb a greased pole than to find a driver that could be depended upon to make a round trip without sliding off the edge of the road and being stuck a few hours at 40c. an hour added to his pay envelope, or losing about 20 gallons of gasoline on account of an alleged leak in the gas line, and of course being compelled to buy more, paying cash for the same. However, by a careful process of elimination and by paying high wages, we have managed to gather a dependable lot of drivers.

The most annoying feature of this work is to listen to the unreasonable howl of complaints of the consignee of a \$1.50 package, because it was left at our New York receiving station at five o'clock last night and it is now 9.15 A. M. and not delivered yet, when he very well knows that it would not have been delivered for a week if it had been sent by express, but I am glad to say that most of our shippers are delighted to get 24-hour service.

We have made a great many trips to the principal manufacturing cities of nine eastern States, and it is our intention to extend our daily service to Baltimore and Washington on January 5th, and gradually extend our service to other cities as rapidly as possible.

It is the delivery of merchandise to consignee that makes this service expensive. We are compelled to do so because the express companies do, inasmuch as our charges are the same as theirs, but we could give considerably lower rates between our Philadelphia and New York receiving stacion if all consignees would call for their shipments. It costs almost 25 per cent as much to make local deliveries of from one to two miles as it does to haul the same merchandise 100 miles. One of the reasons we make our runs at night is to enable the trucks to deliver their own loads the following day in order to reduce this cost of delivery as much as possible.

Some sections of roads between Philadelphia and New York in New Jersey are not good, but they might be worse, so we have no complaint to make on that score. We do object, however, to an hour's heavy rain, freezing as it falls on 15 inches of snow, as it did Thursday night, December 13th.

Bucking 15 inches of snow is bad enough, although it can be done, but covering it with an inch of ice is rather rubbing it in, and to show you how it affects our schedule I will give you the log of one of our trucks that broke the way out of New York on that night:

Left New York at 6:30 P. M. Heavy snow fall, Arrived Elizabeth, 18 miles, 2:45 A. M. Blinding rain: Stopped for night.

Stopped for night.

Left 6 A. M. Friday,
Arrived at Metuchen, 26 miles,
5:40

P. M. used 51 gal. gasoline.

Left 7 A. M. Saturday, ran
2 miles

Back to Metuchen waiting balance of day
for chains, picks and shovels.

Left 6 A. M. Sunday,
Arrived Philadelphia, 60 miles, at 12 o'clock
midnight.

From the information available very few attempts have been made heretofore to operate motor trucks between Philadelphia and New York during or immediately after heavy snow storms, and many of our customers have doubted our ability to maintain our schedule, but we are convinced that we can do so with possibly occasional

#### Highly Trained Organization a Factor in Long-Distance Hauling

Some of you are probably interested in the cost of operation of motor trucks engaged in long distance hauling, and I regret exceedingly that I cannot give you that information for obvious reasons. It would be of very little value, however, to the operator of only a few trucks who could not buy supplies at quantity prices, and who did not have the benefit of a highly trained organization, which to my mind stands more for success or failure in this line of work than in any other that I have ever come in contact with.

It might be of interest to some of you to know that our average running time for the trip to New York is about eight hours in fair weather, and also that it is possible to make it in six hours, because one of our drivers did it once. He is not with us now,

I have frequently been asked if long distance hauling by motor truck is practicable and profitable. Also that, if it is at this time, if there is any probability of its continuing to be so after the conclusion of the war. In my opinion this business, which is only in its infancy, will prove as profitable after peace is declared as it is today, and that more and more of the high class freight shipments, where speed of delivery is essential, will be moved distances up to 500 miles with motor trucks.

The extension of our express service to Baltimore and Washington, D. C., gives us a continuous run of over 250 miles, from New York to Washington, so you can judge for yourselves what the future holds for long distance hauling by motor truck.

## Body for Nash Quad Moulded From Redwood Tree

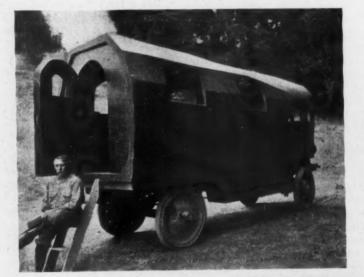
Charles Kellogg, Naturalist, Converts Fallen Monarch Into Mobile Home

NE of the most unique truck bodies and perhaps the largest single piece of hewn timber in the world has been completed and is now serving simultaneously as a body for a Nash Ouad, a home for the builder and an advertisement for his plea that California's great redwood trees should receive more protection.

Mr. Kellogg is a naturalist of coast-tocoast fame. His knowledge of nature and woodcraft was obtained from constant contact with the great outdoors. Practically all his life was spent in the majestic forests of California. The great plains, the far North, the wilds of Africa, and every nook and corner of the earth that has interest for the naturalist has had a visit from Charles Kellogg.

#### How a Dream Became a Reality

As Mr. Kellogg grew older, he visualized a natural home in which he might live and retain the breath of his favorite When he was down on the outdoors. Mexican border he saw the countless numbers of powerful army trucks successfully and easily ride through the mire of almost impassable roads. It was there that the idea of a motorized home was born. "Why not put one of the giant redwood trees on the chassis of a truck and use it as a means of preserving these great, growing redwoods in California by awakening pub-



Charles Kellogg, Naturalist, and the Truck-Body Home That He Made From the Trunk of a Great Redwood



Simplicity, refine-ment and comfort characterize the home, which makes it unnecessary for the Kelloggs to rely on hotel accommodations while traveling.





# A Transportation "Giant"

THE full value of the motor truck is now being universally felt. From bridging the gaps of transportation due to unusual demands on railroads, it has established itself as an organized system of distribution, running from city to city on definite schedule. Since the builders of

# Firestone Tires

originated this Giant truck tire, three years ago, there have been practically no restrictions to motor transportation. Equipped with these massive tires, with the grooved treads, trucks get through snow, mud and over ice, connecting the commercial centers with the outside world, independent of track or congested thoroughfare.

These Firestone Giant truck tires make tremendous loads possible because all the rubber is under all the load all the time, regardless of

irregularities in the road. This great bulk of resilient rubber in one body, grooved to give play and grip, accounts for the remarkable traction of this tire, the fuel it saves, the unusual protection it affords the truck, and the net result of Most Miles per Dollar.

Sizes: 8, 10, 12 and 14 inch widths for medium and heavy duty. There are many other types of Firestone Truck Tires, one for every load, road and condition. Consult the Firestone man.

FIRESTONE TIRE AND RUBBER COMPANY

AKRON, OHIO BRANCHES AND DEALERS EVERYWHERE

lic sentiment throughout the country," thought the man of ideas. "I believe more can be accomplished in the behalf of the forest giants by a dramatic, impressive display of the largest single piece of hewn timber in the world, than by thousands of lectures and public addresses."

Following out his idea Mr. Kellogg searched for a tree of suitable size. He preferred a section of trunk that was at least partially seasoned. A great fallen tree in the Eel river forest was selected. It had lain reposing for perhaps a century or more and yet life was not entirely extinct, because the wood was full of sap.

After pitching camp in the neighborhood of this great giant, a section of the trunk was selected and a piece 22 ft. long was cut off and rolled to a place where it could be worked more conveniently. The diameter of this piece was II ft. Before cutting the tree it had been some 360 ft. long and 33 ft. in circumference-a veritable monarch of the woods. A special Nash Quad was rushed through to assist the naturalist in his undertaking and to provide a chassis for the body when finished. When the section had been rolled out into the open, the bark and sap were slabbed off. Then came the task of converting the solid trunk into a shell.

#### Hollowing Out the Center Was Some Job

This presented many problems. Work of this kind had never been attempted before and there was no precedent to act as a guide. Chopping out the center was tried and after three days of arduous work, was abandoned as hopeless. A 22-ft. auger and a gas engine failed. Oxy-acetylene was tried, but the wood carbonized in a wall. As a result of Kellogg's own ideas, a long gas pipe was driven through the center of the trunk, using the Nash truck as a pounder. A pepper-wood chisel served to enlarge this aperture, being fastened to the front of the truck with chains. The hollowing-out process was then completed with a 22-ft. chisel, after which nothing but a shell, I ft. thick, remained, which had an estimated weight of 6,000 lb. The final finishing of the interior and exterior Mr. Kellogg trusted to his eye alone, smoothing out the log and molding it as would a sculptor.

The problem of mounting the heavy body on the truck was solved by cribbing the corners with slabs, and digging a passage-way beneath. The Nash Quad was then driven under the great log and the latter was slowly lowered into place.

The final work of drying-out the wood reduced its weight by over 1000 lb. Plate-glass windows, space for beds, electric fixtures and wiring, closets, lavatory, and folding arrangements were finished one after the other until the work was entirely finished to the satisfaction of the owner.

Mr. Kellogg, his wife, and his mechanician who, by the way, is Mr. F. Poulsen, of the Nash Motors Co., are touring the States in this unique home. In the large cities, the truck and its body have been on display. The comforts of living in a home such as this one are very apparent to Mr. Kellogg, and also to his wife, who gave up what are called the "luxuries of life" to enjoy the simple life in all its grandeur.

## The Elgin Street-Cleaning Machine

MACHINE that will sprinkle, sweep, collect in one operation and which is driven by a powerful gasoline engine and operated entirely by one man is made by the Elgin Street Sweeper Co., Elgin, Ill. It is claimed by the company that more than fifty cities are now using the Elgin machine satisfactorily for cleaning streets.

The Elgin places atomized water on the pavements in sufficient quantity to settle the dust completely and then, before the water has had time to work through the dust and make mud, the broom, rotating on the pavement, sweeps it thoroughly. The sweepings are immediately caught up in an enclosed hopper.

Being carried on three wheels, this machine can turn around almost in its own space. Steering is by a single wheel in the The broom and elevator have two speeds independent of the speed of the machine. When new, the broom has a diameter of 34 in. and when worn out, 21 in. It is 8 ft. wide. The water flow does not depend upon gravity but is forced to the pavement through atomizers by compressed air. The amount can be varied by turning a hand wheel alongside the driver's seat. A water tank that holds nearly 200 gal. is filled by attaching a hose to any hydrant. The hopper that holds the sweepings has a capacity of nearly 3 cu. yd. and is easily and quickly dumped by drawing a lever at the driver's seat. The machine is designed so that one man can entirely operate it without leaving his seat, except to start the engine or attach the hose to a hydrant. The brooms sent with the machine are of stiff bamboo, wound on a grooved core that can be easily refilled. A broom lasts from 7 to 15 8-hr. working days, according to the character of work. When cleaning, the machine should travel at a maximum speed of 6 m.p.h., which is equivalent to a maximum capacity of 48 miles, 8 ft. wide, per 8-hr. day. The driver's seat is set so that the operator can watch all the street ahead and regulate his machine to take care of the particular work to be encountered.

The engine is a 4½ x 5½-in., 4 cyl. type, and the Stromberg carburetor is fitted with a Pierce governor. The clutch is a Borg & Beck dry disc, enclosed in the flywheel. Transmission is of the regular three-speed

forward and one reverse type, with differential and broom and conveyor shaft gears enclosed in the same case and run in oil bath. The radiator is of the cellular core type and is carried in spring suspension. The rear axle is a solid steel section, 2 x 3 in., and wheels are of the artillery type, 36 x 7 in., fitted with 7-in. standard truck tires. The machine is equipped with a complete set of tools enclosed in a tool box.

#### Truck Derails Locomotive

It is an expensive practice for motor trucks to run into steam railroad locomotives and knock them off the track. It is even more expensive when the truck also derails a passenger coach. The Essex, Mass., courts have decided that it is worth fully \$500 to the offended railroad and consequently damages to that amount have been assessed against the Peabody-Woburn Machine Co. The award is also a departure from the time-honored custom of letting the railroad settle as a defendant in such litigation.

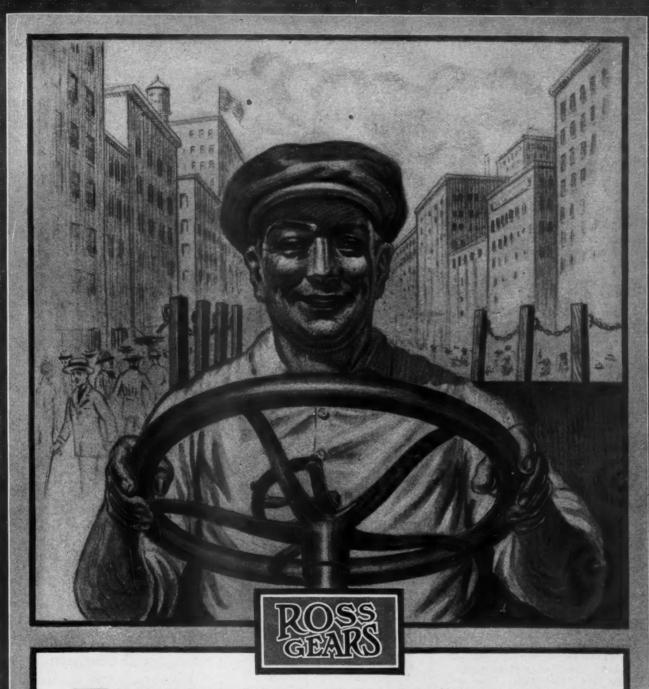
The jury decided that the rolling stock of the railroad was rudely jolted from its course at the West Peabody crossing in June, 1916. The owners of the truck also brought a counter suit against the railroad, but this suit was dismissed. Both suits were tried together and the jury held the truck wholly to blame. It is also the first time in the history of railroad accidents in which the railroad was victor in its suit as a result of a collision. Railroads have frequently brought counter-charges in a suit for their own defense, but never before have they sued and recovered damages.

The truck which wrought all the havoc was of the one-ton variety, of light construction, but powerful. It hit the engine and knocked it over, and the passenger coach next the engine left the rails. The driver of the truck, John J. Flynn, was billed

Pan Motor Co., St. Cloud, Minn., has contracted for machinery and equipment for its new drop forge plant, which will be completed about July 1. Factory No. 2, a reinforced concrete structure, 624 x 170 ft., will be completed within a month. Passenger cars are now being produced at Factory No. 1, and the company plans to begin the manufacture of a tractor in May.



Elgin Motor Sweeper That Was Recently Tested by the City of Philadelphia



HIS CONTENTED DRIVER is only one of over a hundred thousand who go to their homes at night with light hearts and untired muscles because the trucks that they drive are equipped with Ross Gears. With Ross Steering Gear, even the heaviest truck is surprisingly easy to control, and Ross quality in materials and workmanship gives an added assurance of safety and reliability. Contented drivers are one reason why Ross Gears are

#### The Steering Gears that Predominate on Motor Trucks

In view of the fact that one hundred and fifteen motor truck manufacturers, representing considerably over half the industry, are now using them as standard equipment, every man who buys a truck and every manufacturer owes it to himself to investigate and to demand the superior service guaranteed by Ross Steering Gears.

Write for New Catalog and any Special Information desired

Ross GEAR & TOOL COMPANY Lafayette, Indiana

#### Motor Truck Freighting Between Chicago and New York

ASTER TRUCKS, INC., Chicago, Ill., will soon establish a motor truck freight hauling service between Chicago and New York and the trucks that will make up the fleet are ready for service just as soon as the roads will permit of heavy hauling. An organization known as the Master Truck Transportation Co., an Illinois corporation, with a capital stock of \$250,000, has been formed to operate this new service.

A fleet of twenty-two internal gear driven 2-ton Masters is ready to make its pioneer journey. All will have special bodies of the stake type with tarpaulin covers, the loading capacity being 12 x 6 x 6 ft. The route of this new freight-carrying line will include Chicago, South Bend, Bryan, Ohio; Toledo,

Rates for hauling will be practically the same as for express, but there will be the added advantage that the power that carries the shipment across country will deliver it at the door of the consignee. Present plans do not include way stations for concentrating freight or for unloading for further distribution. By hauling all this business under contract there will be no necessity for Interstate Commerce Commission regulations.

#### Maxwell Makes Endurance Run

A stock Maxwell 1-ton truck which left New York Dec. 1 has completed an endurance run covering 2488 miles. The route led through Philadelphia, Washington, Richmond, Atlanta, to Jackson-



One of the Twenty-Four Master Trucks That Will be Used in the Chicago to New York Motor Truck Freighting Service by the Master Truck Transportation Company

Cleveland, Erie, Pa.; Buffalo, Rochester, Syracuse, Utica, Albany, Poughkeepsie and New York.

One truck will be devoted entirely to the carrying of oil and gasoline for the use of the trucks in the convoy. Another has been equipped as a kitchen to prepare meals for the drivers and mechanics en route, while a third will carry tents and sleeping equipment for the men. Thus there will be no necessity for depending on hotels or restaurants

The hauling will be done under contracts and there will be no "less than truck load" shipments taken. Further, these full loads must all go to one destination. There will be no intermediate stations for the present, shipments being taken only for Buffalo and New York. Contracts also have been signed to insure full loads for the trucks on their return trips.

The trucks will run in convoy formation and ten or eleven hours will constitute a day's run. One feature of the trucks will be the pneumatic tire equipment, with the use of which the company plans a speed for its trucks of 25 to 30 m.p.h. Special changes in construction have been made to permit of this speed. The drivers that start will continue with their trucks throughout the trip. The character of freight to be handled will include anything that can be moved via a truck of the capacity mentioned.

ville, Fla., and return through Savannah, Augusta, Columbia, Raleigh and Richmond to Washington. The average gasoline consumption was 10.56 m.p.g. and average consumption of oil, 2.0497 qt: per 100 miles, of water 1.334 pt. per 100 miles. The run was made under unfavorable weather conditions. The only repair necessary, however, were the replacement of one coil radiator spring and one fan belt. No adjustments except minor ones on carburetor and gasoline feed line were made during the run. The run was made under the supervision of the American Automobile Association, James A. Hemstreet being official observer and the official sanction being No.

Contracts for Nash Quads Awarded—Paige-Detroit Motor Car Co. and Hudson Motor Car Co., both of Detroit, and Premier Motor Corp. and National Motor Vehicle Co., both of Indianapolis, have been awarded contracts for 2000 Nash quad trucks for the government. The Nash Motors Company has turned over its working plans and blue prints to the government and has given the government free use of its plans for the duration of the war.

#### For Improved Freight Delivery

Editor :-

Your editorial on co-operative delivery is along the right lines but to it should be added delivery by the transportation companies. During the past year we have been held up by freight embargoes and more recently the entire eastern manufacturing ability has been stopped to allow terminal congestion to be relieved as well as move coal and such necessities. The Clyde line steamers threaten to cease coming to Philadelphia if they may not deliver the goods they handle and thus keep their piers usable. This is the real solution.

We learned years ago that a lot of independent and separate sections of railway could not serve us so well as through lines. We gave preference to all-rail routes in order to avoid transfer delays and thus permitted our waterways to be suppressed instead of compelling both to work in harmony. We all know the handiness and advantage of the express and mail systems which pick up at and deliver to our doors but we do not insist that the freight handlers serve us the same way.

Now is the time to do this. It would solve the terminal problem and would serve the small man just as well as the large corporation. In this respect it would be a decided gain for many a small concern cannot afford a truck or a fleet of trucks but must hire at high prices and wait for the goods until the hired truckman finds opportunity to bring them. Thus the small merchant or shop is at a disadvantage whereas we should encourage and stimulate the small concern and help it to grow big.

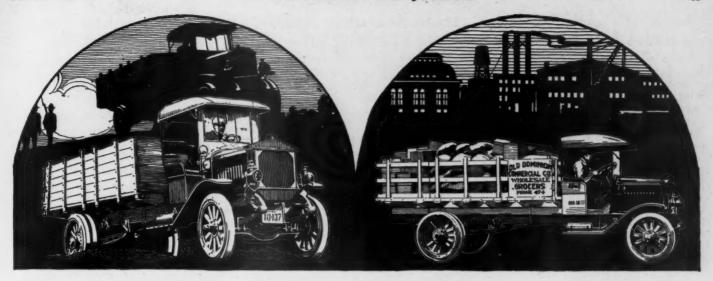
Under Government ownership we can have union terminals and one delivery and collection system with no duplication and with great saving and far better service than we now get.

CHAS. E. DURYEA.

## M. T. C. Honors Captain Green at Luncheon

Motor Truck Club of America, New York, N. Y., held a luncheon recently at the Hotel Astor in honor of Captain George A. Green, chief engineer of the Fifth Avenue Coach Co. Captain Green has just returned from the war zone on a short furlough. He was in charge of the "tanks" in Flanders, and was in the first "tank" to go "over the top." Among those present at the luncheon were Secretary of State Hugo Emanuel Lascaris and D. C. Fenner, president of the Motor Truck Club of America.

Indianapolis-Chicago Truck Route—Motor freight service between Indianapolis and Chicago has been inaugurated by Racklind & Farber, produce merchants, who have stores in both cities. A Maxwell truck, loaded with 23,000 lb. of perishable freight, recently made the run of 186 miles in 18 hours.



# War's Transportation Problem-and Yours

WHEN railroads fail or do not exist, use Velie trucks. "Over here" or "there"—a like problem finds a like solution. Velie trucks are veterans in the business of war or the war of business.

Velie trucks are economical in upkeep and operation—flexible for traffic—powerful for snow-drifted or mudrutted roads—capacious for maximum loads—simple to operate and maintain—all the requirements to produce results.

Transform your trucking facilities now. The need is urgent—no time is more opportune. Results are certain to be profitable if you equip with Velie.

Two sizes: 1½-2-ton, 3½-ton.

Here are some of the fighting qualities—heavy-duty Continental motor; Timken-David Brown worm and gear drive; four speed transmission; steel Raybestos clutch; Timken bearings throughout; removable tubular radiator; extra heavy pressed steel frame; heavy silico-manganese steel springs; large wheels and the Velie large, powerful brakes.

Driver's cab, hubodometer, heavy bumper, Prest-O-Lite tank and gas headlights are included besides regular lighting equipment.

Write today for booklets and complete particulars

VELIE MOTORS CORPORATION, 119 Velie Place, Moline, Illinois
Builders of Automobiles, Motor Trucks and Tractors



#### Danger of Gasoline Shortage Grows Less Imminent

Much relief is felt by the automotive trades and by those who use automotive vehicles by reason of a recent announcement to the effect that the gasoline famine is past. A. C. Bedford, chairman of the Petroleum Committee of the Council of National Defense, has given out the following statement:

"There is no shortage of gasoline for use in this country. As a matter of fact, as a result of the light domestic demand incident to the winter weather, the stocks of gasoline are increasing and will further increase before the heavy summer demand is encountered.

"Experience and inquiry make it clear that the petroleum industry in America can and will supply all the increased demand for oil products for the war, provided sufficient tank steamers can be obtained. It is estimated that in 1917 not over 25 per cent of the gasoline produced in this country was exported. That fact should be reassuring to anyone who doubts this country's ability to supply the war requirements of our own and our allied governments for this important product."

#### Ordnance Department Asks for Civilian Workers

Men having a high-school education, some shop training and the ability to adapt themselves to new work may qualify for a Government appointment in which they will receive training under Government instructors which will enable them to fill various positions as inspectors, among which are listed assistant inspectors of motor vehicles and artillery wheels. These positions are under civil service regulations, but applicants will not be required to report for examination at any place. Applicants will be rated in accordance with education and experience. Further information can be obtained from C. V. Meserole, Special Representative of the Ordnance Department, U. S. A., Room 800, 79 Wall Street, New York City.

#### Highway Transport Committee Plans Truck Routes

In carrying out its plans for the establishment of the "Return Loads" system, the Highway Transport committee proposes to take in on its route only the larger cities. The first return loads will be through Boston to Washington, then New York to Buffalo, and next Philadelphia to Chicago, taking in Cleveland, Detroit, Indianapolis and Cincinnati. It is planned to include also smaller cities later on. The committee is asking the co-operation of the chambers of commerce of the cities on the route, and hopes, through letters pointing out the necessity of getting together the man with goods to ship and the man with an empty truck or one only partly filled, to secure the operation of the system in the near future.

#### **Tractor Association Organized**

Manufacturers of gas, oil and steam tractors and plows and accessories, distributors and factory branch managers are eligible for membership in the Northwest Tractor Trade Association, formed recently in Minneapolis. The object of the organization is the promotion of more effective co-operation between the manufacturer and the distributor and the general betterment of conditions in the industry. The association was formed at a meeting held at the Hotel Radisson which was attended by 80 persons. Bylaws were adopted at this meeting and the following officers elected: D. J. Murphy, president; N. B. Nelson and J. M. Orton, vice-presidents; W. B. Gleason, secretary, and P. J. Perry, treasurer; H. W. Brown, H. D. Dodge, P. J. Keating, W. R. Stephens and E. K. Jenkins, di-

#### Used Trucks for Sale at Chicago Used-Car Show

Owing to the success of the first used car show, Manager Thos. P. Convey announces a second annual used car show to be held in the Coliseum in Chicago March 30th to April 7th. It will be given under the auspices of the Chicago Automobile Trade Association.

Cars are to be technically examined before they will be allowed space on the floor. It is said that approximately 80 per cent of the space was engaged within 72 hours after the announcement of the show date.

Sanford Motor Truck Co., Syracuse, N. Y., at a recent meeting of the board of directors, voted to increase the capital by \$100,000. It was also decided to erect a new factory building to care for increased production.

Greenfield Tap and Die Corp., Greenfield, Mass., has completed the construction of its administration building. Offices and shipping rooms are now centralized in this one building which gives employment to 125 persons in the offices alone.

Edgar T. Ward's Sons Co. has been incorporated recently, and will include the following companies: Edgar T. Ward's Sons, Boston, Mass.; Geo. Nash Co., New York, N. Y.; Geo. Nash Co., Chicago, Ill.; Field & Co., Inc., N. Philadelphia, Pa.; Dilworth, Lockwood & Co., New York, N. Y.; Dilworth, Lockwood & Co., Newark, N. J.

Polack Tyre & Rubber Co., New York City, announces the following changes in several of its branch offices: The Newark, N. J., office has been removed to 27 Frelinghuysen Ave.; the Buffalo, N. Y., office has been removed to 1474 Main St.; the Washington, D. C., service station will be located at 1116 C St., N. W., and the Washington, D. C., office at 711 Thirteenth St., N. W.

#### Highway Regulations Must Meet War Conditions

At a meeting of the Motor Truck Club of America, Inc., George H. Pride, vice-president of the club and member of the National Highways Committee of the Advisory Council of National Defense, called the attention of the members to the necessity of providing for altered conditions in transportation brought about by the war. An increase of accidents, he said, may be expected as a result of the substitution of inexperienced truck drivers for those who are in the service of the Government. One way of preventing these, he suggested, was the building of playgrounds for children. on the flat roofs of buildings in the congested section.

Mr. Pride pointed out the necessity of the immediate removal of snow from the highways as a means of assisting the railroads in transportation. He also said that state legislation tending to minimize the use of highways must be held up until after the war, that appropriations for the building and maintenance of State highways must be increased instead of decreased, and that if the priority order prohibiting the use of open freight cars for the transportation of road building material interferes with road building, new sources of supply or materials must be found, new methods of distribution developed, or the. roads must be maintained with materials available within trucking distance.

United States Motor Truck Co., Cincinnati, O., is planning to erect an addition to its group of factory buildings. The new building will be of brick and steel construction, three stories in height. It will be used for testing, final assembly and painting.

Champion Spark Plug Co., Toledo, O., manufactured more than 24,000,000 spark plugs in 1917. This production represents 80 times the number of spark plugs made in 1910, the year the company commenced operations. The production for 1917 was 10,000,000 spark plugs in advance of that of 1916.

Chandler Motor Car Co., Cleveland, O., has received a large contract from the Government for the manufacture of tractors. The tractors will be of the heavy-duty type to be furnished to the Allies by the United States. The contract amounts to more than \$10,000,000 and will probably require the erection of a new plant.

Noble Motor Truck Corp., was organized at a meeting of the stockholders of the Noble Motor Truck Co., held at the factory at Kendallville, Ind. The new company has been capitalized at \$1,000,000, and plans to increase its output of trucks and to enlarge its factory buildings. C. J. Munton is president of the new company; J. L. Hauff, vice-president; G. M. Patterson, secretary. The directors include A. M. Jacobs, W. W. Roberts. C. J. Munton. J. L. Hauff, G. M. Patterson and G. D. McLeod.

Order any drayman to load his wagon to stand over night for early morning delivery. He will object.

The weight, standing still, will quickly ruin his wooden wheels by putting "flats" in them.

In the faster running Motor Truck and Trailer this results not only in the early loss of the wooden wheels, but in great damage to all driving parts from racking. The out-of-round wheel also causes much loss by far harder tire wear, and the necessity for more gasoline to propel truck and load on wheels forced out of shape by the standing weight.

Smith Wheels meet every exacting requirement created by the highest demands of present day truck efficiency and economy. Under every conceivable condition they retain their original shape

indefinitely.

Motor trucks greatly increase freight-handling capacity at railroad terminals over the antiquated dray. To obtain the greatest efficiency in this respect, have all trucks and trailers load to full capacity while freighthouses are closed so that when they are opened up you can instantly rush your goods to market. Smith Wheels make this possible, practicable and most advisable.

The short-haul freight greatly handicaps the railroads in their handling long-haul freight traffic. The motor truck will save the day for the railroads and the country. Smith Wheels will be a very large contributing factor in this work for the preservation and

advancement of all business interests.

In the motor truck express service, trucks and trailers equipped with Smith Wheels can be loaded at the close of business hours to start out on their trip the following morning at daybreak. A truck equipped with Smith Wheels arriving at its destination after the close of business can retain its load until the following morning—or, if more desirable, can be unloaded then and reloaded immediately for an early morning start without injury to the Smith Wheels or the lessening of the earning power or durability of the truck.

Smith Wheels are guaranteed for life of the truck upon which originally placed. They much increase tire mileage. They minimize gasoline consumption and by so doing reduce the power transmitted to the wheels, thus lengthening the life of all driving parts.

## Truck Delivery Relieves Freight Congestion

The new motor truck line that has been operating between Cleveland and Youngstown is proving most satisfactory as a means to help relieve the freight congestions in this section. Many tons of rush freight are shipped daily from these points. The weather conditions make little difference. The runs are made in all kinds of weather. Many trips were made in snow hub deep, drifts from five to ten feet deep were driven through, while freight trains were tied up for days.

Several trucks are now operating between the Mahoning and Shenango Valley industrial districts. The trips are made in two hours and less, a distance of twenty miles. Each truck load in the past week weighed a few hundred pounds over six tons. The material carried has been steel castings from the Sharon foundry to a big plant in Youngstown.

Large Appropriation for Tanks.—Fifty million dollars has been appropriated by the Government for the purchase of tractor tanks. The tanks which will be ordered have already been tested by officers of both the American and the Allied armies and will range from 12 to 125 h.p.

Guilford Motor Truck Co., organized recently with a capital of \$250,000 and established at Martinsburg, W. Va., is making preparations to remove to Greensboro, N. C. The company will manufacture a 1-ton truck, with 130-in. wheelbase, worm drive, electric lights and starter, which will sell for \$1075. Materials and machinery for the manufacture of trucks have already been purchased and will be transferred to Greensboro.

Erd Motor Co., Saginaw, Mich., is erecting an addition to its factory which will add 48,000 sq. ft. of floor space to the plant. The addition will be 404 x 121 ft. and will provide facilities for the increased production necessitated by the manufacture of the new tractor engine which the company expects to begin producing in May or June.

Denby Motor Truck Co., Detroit, Mich., is erecting a building of brick and steel reinforced concrete construction. This building will be used as an assembly plant.

Kincannon Silent Transmission Co., recently formed at Boscobel, Wis., to manufacture an improved gearset for motor vehicles, has elected the following officers: President, George C. Kincannon; vice-president, Peter Boebel; secretary, Roy Greenfield; treasurer, Richard Black.

Peerless Truck and Motor Corporation, Cleveland, O., has sent notice to holders of its 6 per cent. convertible notes that the company is prepared to expend \$750,000 in the purchase of part of the issue. Proposals of sale of notes will be received from holders up to March 18, payment to be made by the Bankers' Trust Co., March 26th.

#### Improved Roads in Ohio

The Commercial Club of Grove City has been doing its bit to improve the roads for autoists throughout this section, and especially all the roads that lead through its home town.

This organization has been instrumental in bringing together the County Commissioners and the Township Supervisors to plan improvements which are to connect the macadam on the Harrisville road with the macadam on the Mercer road, to which the State Highway Commissioner has agreed, and the State will pay one-half of the entire expenses—the county and townships to pay the remaining half.

The Commercial Club is lending every possible assistance, and has agreed to raise a fund by public subscriptions to help at the borough limits. The Committee in charge has the work under way, and is meeting with very liberal response in the donations from the citizens of their city.

When the proposed improvement is made it will give improved roads from Grove City to Mercer, Sharon, Youngstown, Warren, Cleveland, Akron, Canton and as far West as Bryen, Ohio, which is only a few miles from the Indiana State line. The State Highway Commissioner has promised that the road from Slippery Rock to Harrisville will be completed this summer, and that six additional miles will be completed on the Butler-Slippery Rock road, and that Butler will be connected with Pittsburgh. When this is done only eight miles will remain unpaved between Pittsburgh and Cleveland by the way of Butler, Grove City and Sharon.

Commerce Motor Truck Co., Detroit, Mich., has received a contract for 1500 1-ton Commerce trucks to be supplied to the Ordnance Department.

Osborn Co., Cleveland, O., manufacturer of tires and tubes, is planning the erection of a factory addition at Garfield, N. J. The plant will be equipped to turn out 500 tires and 1000 tubes daily.

Hercules Motor Mfg. Co., Canton, O., has concluded a contract with Henry Ford & Son for 65,000 Ford tractor engines. These motors will be delivered at the rate of 100 per day and will be shipped to Cork, Ireland, where Henry Ford & Son have an assembly plant.

Homer Laughlin Engineers Corp., Los Angeles, Cal., has taken over the auxiliary transmission for Ford cars, formerly known as the Langbein. The transmission will be known in future as the Laughlin-Langbein auxiliary transmission for Ford cars and trucks.

Federal Tractor Co., Minneapolis, Minn., manufacturer of the Tom Thumb tractor, has elected the following officers: H. A. Brown, president; J. A. Kirby, vice-president; A. A. Robbins, secretary-treasurer. Mr. Brown has been commissioned a Major and is at present stationed at Washington. In his absence Mr. Robbins will have active control.

#### Government Places Orders for Trailers

The Columbia Motors Co., Detroit, is making plans to rearrange its factory facilities and forces to fill the order for 500 twowheel 1-ton trailers which it has received from the Government. The company expects to be able to do this without interfering with the manufacture of passenger cars. The Government has requested that the necessary arrangements be made to enable the company to handle subsequent orders. Four other companies have received war orders for trailers. They are: The Dort Motor Car Co., which received an order for 1500 trailers; the Ohio Trailer Co., 1000, and the Miami and Rogers Trailer companies, 500 each.

A government contract for heavyduty trailers has been awarded to the Warner Mfg. Co., Beloit, Wis. The trailers are the standard type Warner, four-wheel model and are intended for use in the motor ammunition trains in France. Shipment overseas is now being made.

Detroit-Wyandotte Motor Truck Co., Wyandotte, Mich., went into receivership in January with assets of \$200,000 and liabilities of \$85,000. The plant and business is now being offered for sale by the Security Trust Co. The company manufactured the Horner truck.

Kelly-Springfield Tire Co., New York, N. Y., reports a net income for the year of \$2,648.913. This is more than twelve times the preferred dividend, and after paying the preferred dividend leaves more than three times what it paid on the common. After the deduction of war tax, dividends, etc., a balance of \$1,453,585 remained.

Republic Motor Truck Co., Alma, Mich., has purchased a building in Los Angeles to be used as a branch factory. This factory will supply dealers in the South and West and handle a large amount of the company's business in Japan, China, Hawaiian Islands, the Philippines, Mexico and South American countries.

Young Patent Hoist Co., Milwaukee, Wis., maker of hoists and dump bodies for motor trucks, has moved to larger quarters at 31-37 Twenty-fifth Street, where a machine shop floor 80 x 120 ft. and a hoist and body mounting department 80 x 80 ft. have been fitted up to take care of increasing business.

Motor Truck Club of America, New York City, discussed the subject of the establishment of a Return Loads Bureau in New York City, at a recent meeting. David C. Fenner, president of the club, spoke briefly on the advantage of such a bureau and of the plan now being carried out in the State of Connecticut by which the chambers of commerce in the cities in that state have notified merchants and manufacturers in their respective towns that they have established such a bureau. A truck driver coming into a strange town calls up the Return Loads Bureau and finds out the names and addresses of the concerns who have goods to be delivered to the town from which he came, or on the route by which he is to return.



# Even in England motor experts want the Atterbury

MANN & OVERTONS, Ltd. the Atterbury dealers in London, England—have just written the following warning to American dealers:

### MANN AND OVERTONS, LTD.

15 Ebury Bridge Road, London, S.W.I.

The Atterbury Motor Car Company,

Dear Sirs:-

We beg to acknowledge receipt of your letter dated 8-31-17.

Mr.——(to whom we sold so many of your Atterburys) has been appointed Transport Manager of the— Menufacturing Company. The business is growing very large and he has been worrying for the last six months or more as to how he can obtain more ATTERBURYS.

We had an interview with their Hanaging Director and he told us he would give us an order for a dozen two-ton Atterburys as soon as we could get a permit for shipment. As they are one of the largest Aeroplane Manufacturers in the world, we feel highly pleased over the way they feel about the ATTERBURY Truck. Mr.— has now had very great experience in commercial motor trucks as he goes about the country and sees no end of imerican makes. His opinion is that there are only two trucks of any use whatever, the ATTERBURY and the

We are always kicking ourselves that we did not place a large order with you some time ago so that we could have had plenty of your trucks on hand, as we could sell all that we could get.

Very truly yours,

MANN & OVERTONS, LTD.

Atterbury Motor Co.

All Buffalo, N. Y.

Buffalo, N. Y.

Buffalo, N. Y.

When Writing, Please Say-"Saw Your Ad. in the CCJ"

#### Personal Items

Harry Krause, formerly with the Wire Wheel Corp. of America, has been appointed assistant general manager in charge of production of the Splitdorf Electrical Co., New-ark, N. J.

A. C. Leverton has recently been appointed factory manager of the Federal Motor Truck Co., Detroit, Mich.

F. E. Davis, formerly connected with the engineering department of the Continental Motors Corp., has recently been made president and general manager of the Tower Motor Truck Co., Greenville, Mich.

Deering J. Marshall has been elected vicepresident of the Jones Motor Car Co., Wichita, Kans.

Bob Lacey has been appointed general sales manager of the Premier Electric Co., Chicago, Ill.

C. H. Smith has been appointed general manager of the Ladish Drop Forge Co., Cudahy, Wis. He was formerly manager of the automobile department of the Savage Arms Corp.

Berry Rockwell has resigned his position as general sales manager of the Smith Motor Truck Corp., Chicago, Ill. He will remain identified with the company as sales and advertising adviser.

T. J. Wetzel has been elected vice-president of the Buffalo Pressed Steel Co., Buffalo, N. Y. Mr. Wetzel is also president of the Wetzel-Hall Co., New York City, manufacturers' agent.

M. D. Davidson has been made sales manager of the truck division of the Lau Iron Works Co., Youngstown, O. This company manufactures the Elton truck unit for Cadillac cars.

P. J. Foster, formerly assistant manager of the Northern Rock Island Plow Co., has been made district manager of the Federal Motor Truck Co., Detroit, Mich. His territory will include Illinois, Missouri, Wisconi, Minnesota, North Dakota and Montana.

R. W. Lea, trade manager of the Moline Plow & Tractor Co., has been commissioned a major in the United States Army, and has been ordered to Jeffersonville, Ark., where he will have charge of army wagon production.

R. F. Jackson, formerly assistant sales manager of the Zenith Carburetor Co., Detroit, Mich., has been appointed sales engineer.

A. P. Warner, president of the Warner Lens Co., Chicago, Ill., has been elected to the presidency of the Bailey Non-Stall Differential Corp., Chicago. George P. Sweet, until recently vice-president and general manager of the United Motor Truck Co., Grand Rapids, Mich., has been commissioned first lieutenant in the aviation division of the Signal Corps.

A. L. Kimball has been appointed chief engineer of the Fulton Motor Truck Co., Farmingdale, L. I.

George E. Lane was elected to the presidency of the Parker Rust Proof Co. of America, Detroit, Mich., upon the resignation of C. W. Parker, founder of the company. Mr. Lane was formerly general manager of the company.

H. M. Ross has been appointed district sales manager by the United States Motor Truck Co., Cincinnati, O. Mr. Ross will make his headquarters in Chicago.

Owen Moynihan has been appointed general sales manager of the Amazon Rubber Co., Akron, O. Mr. Moynihan was formerly manager of the New York branch of the Amazon Company.

Louis Schwitzer has been elected president of the Automotive Parts Co., Indianapolis, Ind. Mr. Schwitzer was formerly vice-president and chief engineer of the Oakes Co., Indianapolis.

George N. Graham is now general works manager of the Boone Tire & Rubber Co. He will have charge of both the Chippewa Falls, Wis., and the Sycamore, Ill., factories.

John Gibney has been made sales manager of the Polack Tyre & Rubber Co., New York City.



E. E. Vreeland

Elected president and general manager of the newly formed Abbot-Downing Truck and Body Company, Concord, N.H., which succeeds Abbot & Downing Company, of that city.

W. H. Oliver, Jr., formerly associated with the Hyatt Roller Bearing Co., and more recently with the Russel Motor Axle Co., is now connected with the Taft-Pierce Mfg. Co., Woonsocket, R. I.

J. B. Howell, of the sales department of the Bound Brook Oil-less Bearing Co., Bound Brook, N. J., is now at Camp Dix training for active service with the United States Army.

Bernard M. Baruch has been appointed head of the War Industries Board to succeed Daniel Willard, who recently resigned.

W. A. Russell has been elected president of Russell & Carroll, Inc., New York City, eastern distributor of Esta Water Auxiliator and Monogram Oils. Mr. Russell was formerly connected with the Packard Co.'s branch at White Plains.

George Batten, president of the George Batten Co., Inc., New York, N. Y., died recently. He organized the company in 1891, and has taken an active interest in it since that time. William H. Johns has been elected to succeed him.

James A. Harris, Jr., advertising manager of the White Co., Cleveland, O., has resigned to accept a commission as captain in the Quartermaster Corps of the United States Army.

Millard H. Newton has been appointed advertising manager of the White Co., Cleveland. O.

F. C. Seeger has been appointed Michigan representative by the Doehler Die-Casting Co., Brooklyn, N. Y. He will make his headquarters at the Detroit Office, 914 Ford Bldg.

R. E. Olds, of the Reo Motor Car Co., has been appointed chairman of the board of directors of the Kardell Tractor & Truck Co., St. Louis, Mo.

Henry H. Hodell, president of the Cleveland Galvanizing Works Co. and of the Van Dorn & Dutton Co., both of Cleveland, O., died recently. Mr. Hodell was also director of several other manufacturing companies in Cleveland.

W. E. Blaine has resigned as truck engineer of the Packard Co. and is now stationed at Washington, having received a commission as captain in the Officers' Reserve Corps of the Ordnance Department.

G. L. Barrett has been appointed manager of the southwestern division, with headquarters at St. Louis, Mo., for the Philadelphia Storage Battery Co., Philadelphia, Pa.

J. Welch is now western manager of the Fruehauf Trailer Co., Detroit, Mich. Mr. Welch will make his headquarters in Kansas City.



F. C. Manning
Who has been appointed general
sales manager of the Splitdorf
Electrical Company, Newark,
New Jersey.



Samuel S. Toback Who has been elected president of the Redden Motor Truck Company, Chicago, Ill.



F. H. Burdette
Who has joined the Hercules
Motor Truck Company, Milwaukee, Wis., as Pacific Coast
sales manager.



J. A. Holihan
Formerly with Federal Motor
Truck Company, now general
sales manager of the Standard
Motor Truck Co., Detroit., Mich.



# Smooth in Action, But a Brute for Work

That just about sums up the impression made by the BUDA ENGINE on one as familiar with it as its driver, whether in truck or farm tractor.

Except for its sturdy appearance, it would seem impossible that a machine which runs so smoothly could be so powerful or so enduring in severest use as the BUDA ENGINE.

The secret is in the careful BUDA manufacturing process, always putting "Performance before Price."

Made by THE BUDA COMPANY, Harvey (Chicago Suburb), Ill.

# THE BUDA ENGINE "HIGH CLASS"

A. E. Barlow has been appointed general sales manager of the Boyce Moto Meter Co., Inc., L. I. City, N. Y.

H. W. Biddle, formerly supervisor of sales for the Champion Spark Plug Co., has recently joined the sales organization of the Silvex Co., Bethlehem, Pa.

C. L. Ughetti, formerly in charge of Indiana and Michigan territory for the Champion Spark Plug Co., has joined the sales forces of the Silvex Co., Bethlehem, Pa.

M. Baker, sales manager of the American Vanadium Co., Pittsburgh, Pa., has been promoted to the rank of Major in the Ordnance Reserve Corps of the Army.

J. F. Bowman has been elected vice-president and general manager of the Acason Motor Truck Co., Detroit, Mich. Mr. Bowman was formerly vice-president and sales director of this company.

Adam Cook, senior member of the firm of Adam Cook's Sons, New York, N. Y., manufacturers of lubricants, died recently at his home in New York City.

M. E. Mason, sales manager of the Mohawk Rubber Co., Akron, O., has just completed his twentieth year as a tire salesman.

C. S. Thompson has been appointed manager of foreign sales of the Four Wheel Drive Co., Clintonville, Wis.

H. F. Harris has been appointed industrial engineer of the Republic Motor Truck Co., Alma. Mich.

Merrill C. Horine, an active member of the Motor Truck Club of America, New York City, has been commissioned a second lieutenant in the Aviation Section of the Signal Reserve Corps.

C. E. Ploch, formerly with the Packard Motor Car Co., has recently been appointed chief engineer of the Fruehauf Trailer Co., Detroit, Mich.

W. K. Frederick has recently been appointed sales manager of the Gryphon Rubber & Tire Corp., New York City.

#### New Agencies

Western Auto & Tractor Co., Ogden, Utah, has been appointed distributor in Utah territory for Studebaker trucks and Cleveland tractors. The headquarters of the company will be at 2331 Hudson Ave.

Portland Tire & Truck Co., Portland, Ore., has been formed to distribute Republic tires and Master trucks in the states of Washington and Oregon. The company will be located at 71 Broadway.

G. M. Proctor, Boston, Mass., has been appointed eastern distributor of the Day-Elder Motors Corp., Newark, N. J.

Walker-Johnson Co. has been formed at Boston, Mass., to distribute the Hercules truck. The company has opened salesrooms on Green St., Cambridge.

C. U. Williams Son & Co., Bloomington, Ill., has been appointed distributor of Lauson tractors in northern Illinois by the John Lauson Mfg. Co., New Holstein, Wis.

Lackawanna Mine and Mill Supply Co., Scranton, Pa., will distribute Larrabee trucks, made by the Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y., in northeastern Pennsylvania.

Warner Sales Co. has been appointed distributor of F. W. D. trucks in Arkansas, Tennessee and northern Mississippi, by the Four Wheel Drive Auto Co., Clintonville, Wis.

Guif Naval Stores Supply Co., New Orleans, La., has contracted with the Four Wheel Drive Auto Co., Clintonville, Wis., for the distribution of F. W. D. trucks in Louisiana and southern Mississippi,

E. J. Berlet, Philadelphia, Pa., will distribute Atterbury trucks in eastern Pennsylvania and southern New Jersey.

Republic Truck Co. of Boston has been formed to take the agency for Republic trucks in Maine, New Hampshire, Vermont and Massachusetts formerly held by the Linscott Motor Co. The company will occupy a new building at 29-33 Brookline Ave., Boston, Mass.

Hartford Motor Car Co., Hartford, Conn., has taken the distributing agency for Atterbury trucks in the state of Connecticut.

Schall-Crouch Auto Co., Baltimore, Md., will distribute Atterbury trucks in Maryland, Delaware and Virginia.

Roesch Motor Car Co., Seattle, Wash., has been appointed northwest coast distributor of Atterbury trucks by the Atterbury Motor Car Co., Buffalo, N. Y.

Snyder Motor Car Co., Spokane, Wash., will handle eastern Washington and north-western Idaho territory for the Atterbury Motor Car Co., Buffalo, N. Y.

McCormick & Vertrees, Denver, Colo., will distribute Atterbury trucks in Colorado, Wyoming and part of New Mexico.

Jennings & Co., Montreal, Can., has acquired the exclusive selling rights for the Fulton truck in the provinces of Ontario and Quebec.

Truckford Co. of Houston, Houston, Tex., has been formed to distribute the Truckford attachment for Ford cars, made by Truckford, Robinson Machine Co., Detroit, Mich., in twenty counties of Texas.

Jackson Auto Co., Detroit, Mich., has been appointed distributor of Fulton trucks by the Fulton Motor Truck Co., Farmingdale, L. I., in 10 counties in southeastern Michigan.

#### Removals and Trade Changes

Independent Motor Co., Port Huron, Mich., has completed plans for the removal of its plant to Youngstown, O. The company is capitalized at \$300,000. Negotiations have been completed for the acquisition of the property of the Miller-Smythe Electric Co. The company will manufacture two trucks, a 1½-ton machine and a 2-ton truck.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., announces the removal of its automobile equipment department to the Newark works of the company, Plane and Orange Sts., Newark, N. J. The general sales offices of the department will be moved to 110 W. 42d St., New York City.

Wolverine Tractor Co., Detroit, Mich., is completing preparations for its removal to Saginaw, Mich.

Oneida Motor Truck Co., Green Bay, Wis., has moved into its new fireproof factory, and the capacity of the plant will be 100 trucks per month. The new factory is 150 x 476 ft., and is one story high. It affords 70,000 sq. ft. of floor space.

Essenkay Products Co., Chicago, Ill., has removed its city sales department to new quarters at 2127 S. Michigan Ave.

Blodgett Engineering Co., Detroit, Mich., is now the Blodgett Engineering & Tool Co.

Motor Parts Co., Philadelphia, Pa., has moved to new headquarters at 847-49 N. Broad St.

Peoria Tractor Co., Peoria, Ill., was recently dissolved and a new corporation, to be known as the Peoria Tractor Corp., was formed under the laws of the State of Delaware.

Racine Motor Truck Co., Racine, Wis., has moved to Appleton, Wis., and has changed its corporate style to Reliance Motor Truck Co.

Farm Tractor Co., Fond du Lac, Wis., has changed its name to Fond du Lac Tractor Co., to avoid confusion resulting from the former style.

American Piston Ring Co., Newark, N. J., has been succeeded by the Hammered Piston Ring Co.

L. & B. Truck Mfg. Co., Los Angeles, Cal., will be succeeded at an early date by the Southern California Truck Mfg. Co.

Rainler Motor Corp. has taken over the building formerly occupied by the Oldsmobile Co., at 225-27 W. 58th St., New York City. The new building will afford the company much larger quarters, and insure the more effective handling of its wholesale and retail business.

Lind-Knapp Co., Inc., San Francisco, Cal., has taken over the Four Wheel Drive Truck Co. in that city, and will distribute F. W. D. trucks in northern California, southern Oregon and western Nevada.

C. H. Tammany, New York, N. Y., distributor of Larrabee trucks, made by the Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y., has removed to 315-17 W. 47th St., New York City.

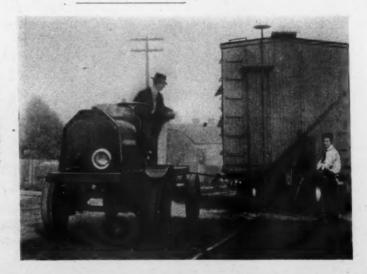
Pan-American Tire Co., Chicago, Ill., has removed from 4741 Broadway to 1114 Michigan Ave.

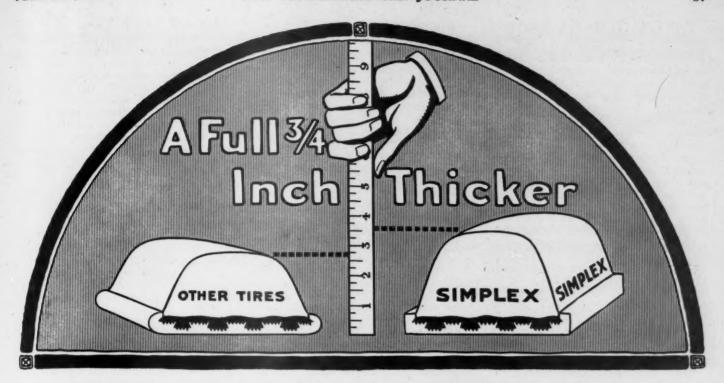
Ballou & Wright, Seattle, Wash., distributors of automobile supplies, have removed from 817 E. Pike St. to larger quarters at 1513-17 Twelfth Ave.

Michigan Tire & Accessories Co., Grand Rapids, Mich., has removed to a new building at 212-16 Michigan St.

Blake-Corson Co., Worcester, Mass., has removed to new salesrooms at 850 Main St. This company handles the Hupmobile car and G. M. C. trucks.

A Two-Ton Duplex Truck, Equipped With Goodrich Truck Tires, Pulling a Box Car Loaded With 126,000 lbs. of Lumber.





# More Miles Per Tire

This is what every user of truck tires is looking for. And this is what Simplex Tires give.

The reason is simply because they are made of an excellent grade of tough, wear-resisting rubber stock, and are made about 25% thicker than the standard tire of other makes.

Think what this extra rubber means to the user.

It means more rubber to wear through—more service for every dollar invested.

It means more cushion for the mechanism of the truck. When other tires are worn so thin that they give little

thin that they give little more protection than a steel tire, Simplex Tires will still be thick enough to give a wide margin of safety.

It is an actual fact that this extra protection which Simplex Tires give to a truck will lengthen its life enough to pay back a large portion of the tire expense. One year added to the life of a five-ton truck will save from five hundred to a thousand dollars in depreciation expense.

This saving, which is secured by using Simplex Super-Size Solid Tires, is best proven by the fact that many

great fleet users who began using Simplex Tires three years ago, today specify them as equipment on their entire fleets. Such concerns don't guess. They buy tires on the basis of carefully kept book records of service and savings.

And bear in mind that not only more rubber is used in Simplex Tires, but it is of

such a superior grade that it would make an unusually long lived tire, even if Simplex Tires were no thicker than ordinary brands.

And Simplex Tires cost no more than you are asked to pay for other makes of standard thickness.

Write for booklet

#### Simplex Rubber Company of America, Inc.

Factory at Batavia, New York

General Sales Offices, 1928 Broadway, New York, N. Y.

Measure for yourself the great size and extra thickness of Simplex Super-Size Solid Tires. For example, you will find a 7" Simplex Tire measure  $3\frac{1}{2}$ " thick, while the standard thickness for a 7" tire is only  $2\frac{3}{4}$ ".



#### M. T. C. Tests Accessories

The Motor Truck Club of America, New York City, has established a method of testing accessories, appliances and equipment for use on motor trucks. A test of the Derf spark plug made recently showed that a car with equipment ordinarily used, in consuming 21/4 gal. of gasoline made 8.1 miles, an average of 3.6 miles per gallon. The same car fitted with Derf spark plugs, consuming the same amount of gasoline, made 10.9 miles, an average of 4.84 miles per gallon. This shows an increase of 1.24 miles per gallon or 34.4 per cent when Derf spark plugs were used. The conditions were practically identical in both cases and the runs over the same route. A 5-ton truck, loaded to capacity, the total weight being 20,700 lb., was used. The gasoline was measured into an auxiliary tank hung on the dashboard. The route was from 77th St. and Broadway to 175th St. and return.

# McKinney Starts Advertising and Merchandising Service

Charles C. McKinney, for the past five and one-half years Western Manager of the COMMERCIAL CAR JOURNAL, has severed his connections with the Chilton Co. and has opened an office at 123 West Madison St., Chicago, where he will be located for the purpose of giving advertising and merchandising service to automobile, parts and accessory makers. Mr. McKinney's work will be unique in that he will supply what is lacking so often in the work of advertising men-namely, that close contact with both the sales and advertising departments so that the subject of merchandising will be considered as well as publicity, and his service will extend beyond the preparation of copy to include advice and suggestions for marketing as well. The number of accounts will be limited in order that personal attention may be given to each one.

Mr. McKinney was one of the first men to realize the wonderful possibilities of the motor truck business and entered the field over ten years ago when the industry could scarcely be dignified by the name. He is well acquainted with most of the leaders in the industry and has won their good will by his serious and intelligent efforts to assists in the upbuilding of this now important industry.

Guaranty Securities Corp., New York City, at its annual meeting added the following directors to its board for three year terms: H. Mercer Walker, vice-president of the Equitable Trust Co.; W. B. Joyce, president of the National Surety Co.; Wm. M. Ramsey, New York agent of the Merchants' Bank of Canada; E. S. Maddock, president, and Paul Fitzpatrick, of the corporation. Other directors were re-elected. Burt McDonald and H. L. Wynegar were elected vice-presidents and F. A. Franklin was elected treasurer and assistant secretary.

#### Changes in Acason Trucks

The Acason Motor Truck Co., Detroit, Mich., have made, aside from a revised price list, several changes in the specifications of their products. Honeycomb radiators, Stromberg carburetors and centrifugal pump water circulation are now found on all models. The two-ton truck has 36 x 4 in. solid front tires and 36 x 7 in. rear. The price is now \$2750. The 3½-ton Acason is now fitted with 36 x 5 in. front and 36 x 5 in. dual real tires. This model now sells for \$3600. Rear tires on the 5-ton model now measure 40 x 6 in. dual, and the price is \$4600.

#### Jitney 'Buses in Youngstown

Because of poor street car service here, the City Council of Youngstown, O., has repealed all legislation imposing restrictions and licenses on jitney buses and will allow them a free reign. Bonds which jitney operators must carry were reduced from \$5000 to \$500.

A number of new buses have been put into service since the new order took effect. More than one hundred jitneys are now operating in the city and vicinity. They have proved their worth as a convenience in this section. The majority of men carried are mill workers, and the majority of mills in the Mahoning Valley are making Government supplies, and the buses made their regular runs regardless of weather conditions and did not miss a single trip on account of the unusual deep snow this winter. This was also taken into consideration by the Council.

Triple Airless Tire Co. will begin the construction of the main building of its plant at Applewold, Pa., in the near future. The first building will be 150 x 200 ft.

#### Maxwell Truck Used in Subway Construction

During the construction of a section of New York's subway system a 1-ton worm-driven truck of the Maxwell Motor Co., Detroit, Mich., was used in place of the old hand-cars in moving material from the various shafts to the point of operation. The truck was equipped with flanged wheels so that it could run on the tracks. On straight runs a speed of 35 m.p.h. was common.

By using a trailer in conjunction with this 1-ton truck, loads totalling some 33,600 lb. are said to have been handled with ease. The engineer of the construction company reports that from the time the truck was put in operation in the latter part of August 1917, until the 1st of January 1918, it had hauled 65,000 ft. of 150-lb. third rail, 35,000 ft. of protection board and in addition had moved tools, drilling machines and men to the different parts of the operation.

Armstrong Rubber Co., Inc., Newark, N. J., is planning the erection of a new factory building at Garfield, N. J. The new plant will have a capacity of 500 tires and 1000 tubes per day.

Topp-Stewart Tractor Co., Clinton-ville, Wis., has purchased two water power sites on the Embarrass River, near Clintonville, and plans to build a hydro-electric plant developing about 800 h.p. The company will manufacture farm and general utility tractors when the factory is ready for occupancy.

Traffic Motor Truck Corp., a corporation recently formed to build a two-ton truck, has leased manufacturing space in the Butler building, St. Louis, Mo., and proposes to build 2500 trucks during the coming year. H. P. Mammen is president of the company and T. C. Brandle, vice-president.



Borst Anti-Skid Traction Chain for Motor Trucks

The latest in anti-skid devices for commercial cars is here illustrated. This device has been perfected by Andrew J. Borst, Jr., of the Borst-Damon Company, Buffalo, New York. This chain arrangement is said to eliminate cutting of tires, skidding on snowy and icy roads, and to provide efficient traction over muddy and soft roads.



The big packing house whose "spoilage" problem requires rapid, all-the-time delivery facilities chooses United States Tires.

The great mail order house, with its strenuous transportation problems places dependence on United States Tires.

The publishing house, whose weekly task it is to flood the country with magazines, desires nothing better than United States Tires to rely upon.

It's significant that the **Leaders** in **Big Business** operating heavy trucks use United States Tires. Significant because it isn't a thing that just happens to be that way.

Men—students of values—experts in buying methods have found these desirable things in U. S. Tires:

# Light Weight Without Impaired Volume or Durability

The tire is at the circumference of the wheel where the inertia or "flywheel" effect of a heavy weight is most pronounced. Wheels equipped with heavy tires skid more easily, consume more engine power in attaining speed, and present more friction in reducing speed.

Resiliency—Our use of highest grade rubber and our secret process treatments result in wonderful resiliency.

Toughness—Our exertion of 1,600,000 pounds pressure in vulcanizing United States Tires secures highest non-porosity and extreme durability.

Service—We are represented in every large city. Quick, efficient, Tire Changes mean much to the truck owner.

#### UNITED STATES TIRE COMPANY

1790 Broadway

**NEW YORK** 

The great railroad whose ability to keep everything moving is its prime asset finds United States Tires for its heavy trucks the "one best bet."

The Brewery with the nationally-consumed product equips its heavy duty trucks with United States Tires and delivers on time.

The Express Company seeking quality supremacy in solid tires for its trucks relies on United States Tires and is not disappointed.

The great Oil Company, upon whose transportation facilities a throng of other businesses depend, places United States Tires on its wheels.

#### Metal and Rubber Markets Steel Industry Awaits New Prices

Since our last report no radical developments have been noted in the steel situation. Within the past week mills have been able, due to better weather conditions, to increase their output from 50 per cent to probably 75 to 80 per cent of rated capacity. Transportation continues to be the main item of importance, aside from the fixing of prices. It is assumed that steel prices will be increased as production costs have increased since the last official statements were made to the Government. Quotations on March 5 were:

#### Steel Products Prices

Bessemer billets, per ton, mill.\$47	00	a	
Open hearth, per ton, mill 44	50	a	
Forging billets, per ton, mill 60	00	a	
Sheet bars, per ton 51	00	a	

#### SHEETS

The following prices are for 100-bundle lots and over f.o.b. mill:

Blu	le .	Anne	aled	Sh	iee	ts-	_									
Nos.	3	to	8							. \$4	20	a		a-1		
Nos.	9	to	10							. 4	25	a				
Nos.	11	and	12							. 4	30	a				
Nos.	13	and	14							. 4	35	a				
Nos.	15	and	16							. 4	45	a				•
No	. 1	7 an	d li	ght	er	g	au	g	es	are	ba	Se	ed	0	)1	0

No. 17 and lighter gauges are based on \$5.50 a \$7.50 per 100 lb. for No. 28 Bessement black sheets.

\$9.00 at \$	1.00	her.	100	ID.	IOL	746		60	ре	88	eIII	lei	
black sh	eets.												
Box A	nnea	led	She	ets,	Col	ld 1	Ro	lle	d				
Nos. 17	to	21.					. 1	\$4	80	a			
Nos. 22	and	24.						4	85	a			
Nos. 25	and	26.						4	90	a			٠.
No. 27								4	95	a			
Galvar	nized	Sh	eets	of	Blac	ek l	Sh	eet	G	au	ge		
Nos. 10	and	11.						\$5	25	a			
Nos. 12	to	14.						5	35	a			
Nos. 15	and	16.						5	50	a			
Nos. 17	to	21.						5	65	a			,
Nos. 22	to	24.						5	80	a			
Nos. 25	and	26.						5	95	a		٠.	
Tin-	Mill	Blac	ek F	late	e-								
Nos. 15	and	16.						\$4	80	a			
Nos. 17	to	21.						4	85	a			
Nos. 22	to	24.						4	90	a			
Nos. 25	to	27.						4	95	a			

#### IRON AND STEEL AT PITTSBURGH

111011 111110 0 - 111111 11- 11- 10-	_	
Bessemer iron\$37	25	a
Bessemer steel, f.o.b. Pittsb'gh 47	50	a
Skelp, grooved steel 2	90	a
Skelp, sheared steel 3	25	a
Ferromanganese (80 per ct.)250	00	a275 00
Steel, melting scrap 22	50	a 24 50
Steel bars 2	90	a
Manganese ore per unit 1	00	a

#### Finished Metal Products

Demand continues heavy for all manufactured metal lines and factories; mills and brass foundries continue active. There is more stability to the market now that the price of copper is more certain, but as yet manufacturers do not quote except on specifications. Following prices for brass and bronze products are nominal:

Sheet zinc	15	00	a			
Sheet aluminum, 1917 contract	42	00	a			
do, outside market contracts	65	00	a	75	00	
do, outs. mkt., prompt ship	75	00	a	80	00	
prompt shipment	70	00	a	75	00	
Copper sheets, not rolled	31	50	a	33	00	
Copper sheets, cold rolled	32	50	a	34	00	
Copper bottoms	39	50	a	41	00	
Copper rods	32	50	a	33	50	
Copper wire	27	00	a	29	00	
High brass sheets	26	75	a	27	50	

High brass wire	26	75	a	27	50
High brass rods	24	75	a	26	75
Low brass sheets	30	00	a	32	00
Low brass wire	30	00	a	32	00
Low brass rods	30	75	a	32	75
Brazed tubing, brass	34	75	a	36	75
Brazed tubing, bronze	39	75	a	41	75
Seamless tubing, brass	25	50	a	37	50
Seamless tubing, copper	38	00	a	40	00
Seamless tubing, bronze	42	50	a	53	50
Full lead sheets	9	25	a		
Cut lead sheets	9	50	a		

ALUMINUM.—An established price of 32c for aluminum was agreed to by the producers and the Government and approved of by the President. It fixes the value at 32c a pound for virgin aluminum at the various American plants and their subsidiaries. It will be subject to revision June I of this year.

TUNGSTEN.—Demand for high grade tungsten ore has been somewhat limited of late, but the price holds at \$24. Off grades vary between \$20 and \$23.50, as to position. Scheelite has been very quiet. Tungsten for shipment from the Far East and South America has been in active demand. Shipments from Hong Kong may not be made to the United States, and there have been fair accumulations at this port.

#### Prices of Old Metals

	Cents pe	er lb.
	Buying.	
Copper—	Buying.	Selling.
Heavy cut & crucibl	e23.00a	23.50a
Heavy and wire	21.00a22.00	23.00a23.50
Light and bottoms.	18.50a19.00	21.00a21.50
Heavy machin'y con		23.00a24.00
Brass, heavy		15.50a16.50
Brass, light		11.75a12.00
Lead, heavy		6.50a 6.75
Tea lead		6.12a 6.37
Zine scrap	5.50a 5.75	6.50a 7.00

The buying prices are those which the large dealers will pay; the selling prices are market quotations.

#### Rubber Market Quiet

Rubber prices have eased somewhat during the month, due to the continued absence of important demand from either manufacturing or dealer sources. Quotations on March 5th were:

July 11 Control			
Para-Up-river, fine, per lb		a	56 1/2
Up-river, coarse	351/2	a	36
Island, fine	47	a	
Island, coarse	24	a	241/2
Caucho, ball, upper	341/2	a	35
Caucho, ball, lower	33	a	
Cameta	231/2	a	24
Ceylon-First latex, pale crepe	561/2	a	
Brown crepe, thin, clean	46 1/2	a	47
Smoked, ribbed, sheets	57	a	
Centrals—Corinto	36 1/2	a	37
Esmeralda	36	a	361/
Guayule	26	a	28
Balata, sheets		a	85
Balata, block Ciudad		a	73
Balata, block Panama	54	a	
Mexican—Scrap	39	a	40
Frontera	39	a	40
African—Massai red		a	
Mosambique—Spindles	56	a	

#### DOMESTIC SCRAP RUBBER

	re is a				-		-		arket
with n	o price	char	iges (	of co	ons	equ	enc	e.	
Tires-	-Autom	obile					43	4a	5
Bicycl	es, pne	uma	tic .				5	a	2
Inner	tubes,	No.	1				20	a	
Inner	tubes.	No.	2					a	1016

Hayes-Ionia Body Co., Grand Rapids, Mich., plans the erection of a three-story addition to its plant. The new building will be 230 x 110 ft.

Bethlehem Truck Co., Allentown, Pa., has begun the construction of another factory unit. This building will be a duplicate of the present assembly plant and will be devoted entirely to the assembling of standard army trucks, for which the Bethlehem company has received three contracts.

General Motors Co.'s plants in Michigan are co-operating for war work. The different companies are handling various parts of the manufacture. The Peninsula Shell Co. will be used as an assembly plant, different branches of General Motors supplying the parts. The Saginaw Malleable Iron Co. will make all the malleable iron castings to be used.

H. W. Johns-Manville Co., New York City, has opened a branch house at 11th and Olive Sts., St. Louis, Mo. The new building is of modern fire-proof construction, and is six stories high.

American Magneto Co., Toledo, O., has taken over all assets, business and good will of the Swiss Magneto Co., and assumed all indebtedness of that company

Pronovost Wheel Co., Toledo, O., recently incorporated at \$350,000, has purchased a factory site at Toledo. The company is manufacturing a wheel, claimed to do away with pneumatic tires, the invention of Joseph Pronovost, president of the company. The company will occupy the plant of the Central Machine and Tool Co., until a suitable plant is erected on the site recently purchased.

International Rubber Co., Denver, Colo.. manufacturer of Gates Half Sole Tires, is erecting a four-story unit, which will enable the company to increase its output to 3000 per day, the present output being 1000 half-sole tires per day.

Buda Co., Harvey, Ill., is erecting a new four-story building of reinforced concrete construction, with brick walls. The company has recently put into full operation a building devoted to assembling and testing truck and tractor engines.

Turner Mfg. Co., Port Washington, Wis., announces a capital increase from \$150,000 to \$250,000. This company makes engines and tractors, and the additional capital is intended for the development of the tractor department. An output of from 400 to 500 tractors is planned for 1918.

Dorris Motor Car Co., St. Louis, Mo., has taken over the plant of the Mogul Motor Truck Co., which adjoins the plant of the Dorris Co. The Dorris company has also acquired a building site, 200 x 177 ft., adjoining the plant, and is making plans to extend the factory.

L. V. Flechter & Co., L. I. City, N. Y., manufacturer of carburetors, has appointed the following companies to handle service on its carburetors: Neptune Motor Co., of Chicago, Cincinnati, Portland and Los Angeles; factory branch, 790 Woodward ave., Detroit. Mich.; Alex Brunner & Son, Newark, N. J.; Burts Supply Agency, Atlantic City. N. J.

# POLACIONES

IO,000 MILES CUARANTEE

> INVARIABLY EXCEEDED

## 43% More Service Guaranteed—

if you use Polack European Standard tires, not to speak of the lessening of truck repairs, insured through use of the higher rubber cushion.

"Higher in price?" Certainly, but—Lowest in cost per mile

POLACK TYRE & RUBBER G.

Broadway and 62d Street

New York

Branches and Service Stations in Principal Cities



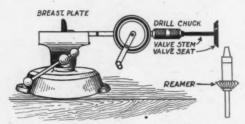
# TRUCK REPAIR DEPARTMENT



Contributions for this department are invited. All accepted matter will be paid for at our regular rates and in addition an extra \$5 will be awarded each month to the author of the letter describing the most generally useful or unique repair.—Editor.

#### Breast Drill as Small Lathe

Grinding valves by using a screw driver in the valve slot and turning the valve by hand is tedious if the valves are pitted, for it will mean a lot of grinding to do a good job and get a perfect seating. Although the breast drill is quicker, the old way is the best, as the grinding done by the machine is more likely to cut a groove around the valve seat, thus making it easier for the valve to become pitted or full of ridges



Arrangement to Use Breast Drill as a Lathe

and let the compression escape. Pitting and grooves in valve seats are usually caused by carbon.

If the valves are pitted very badly and are full of holes, a good way to do quick work and make a good job is to fasten a breast drill in a vise and put the valve in the drill chuck as illustrated. Then, while some one turns the breast drill revolving the valve, hold a fine file (a large flat bastard file is the best), against the valve, being sure to keep it flat against the seat. The file, which should be held lightly so as not to take off too much in one spot, will take all the rough pits out of the seat, thereby making it easy to grind.

After finishing all the valves in this way with a smooth finish all around the seat, wrap a fine piece of emery cloth around the file and finish the seat almost to a polish. Then take a fine emery cloth and polish the tops and stems of the valves, making them easier to grind, as the grinding compound will only have to grind in a perfect seat and not be grinding the dirt off the valve.

By getting the exact angle of the valve seat a reamer can be made out of an old chisel or piece of steel or, better, a reamer made for the purpose can be bought and with it the seats can be trued, if they are in bad condition, in a short time, thereby saving a lot of unnecessary grinding and

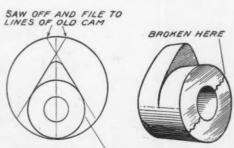
When an exhaust valve is found to be burnt around its seat, which will be noticed by a misfire in the engine due to the gas escaping from the cylinder before it ignites, first look at the exhaust pipe to see that neither it nor the muffler is blocked, thereby

forcing the charge back against the valves and burning them from the heat as the charge gets ignited from the hot exhaust pipe or next charge from other cylinders, for burnt valves are often caused by a blocked up muffler.

To straighten a bent valve without having a lathe, take a large nut, say about 11/4 diameter, and put the valve stem through it so that the nut fits up against the valve top. Then lay the nut on top of a vise with the valve stem protruding through the vise jaws. Tighten up the vise just enough to hold the valve in place loosely. Then take a light hammer and tap the valve on the side it is bent. After the valve looks to be straight put it in the breast drill and by revolving it while holding a piece of chalk against the seat it can be seen where it needs truing. After it tests true, grind the valve in its seat and if the stem is straight the valve will bear all around. If not, mark on top of the valve the spots that do not bear, then put it through the nut in the vise and tap it lightly on top until it is straight.-Stanley Slosser, Summit Hill, Pa.

#### Broken Cam Quickly Replaced

To make a new cam to replace a broken one of the removable kind I drilled and reamed a piece of steel with a 34-in. hole for the shaft, then placing it on an arbor, end to end with the broken pieces of the



OUTLINE OF OLD CAM

#### New Cam Made From Broken One as Pattern

old cam, I scribed the shape of the cam on the new piece of steel, turned down the hub end to size, took it from the lathe and sawed the surplus stock from the sides of cam, filed it to the lines, replaced it on the lathe with a large dog on the arbor and jack turned the balance of the stock from the back of the cam to give it a true surface, all as illustrated in the accompanying sketches. By "jack turning" I mean to work the lathe backward and forward by hand as far as the true circle on the back of the cam would allow.

#### Restoring Scored Cylinder

Sometime ago I had occasion to repair some wristpin scores in a V-type, 2-cylinder engine, built somewhat on the style of a motorcycle engine, only larger, the cylinders being 3½ in. diam.

The wall of the damaged cylinder was not thick enough to stand reboring, as the scores were quite deep. The cylinders were cast "en bloc" with the crankcase but had removable heads and the end plates of the crankcase also were removable.



Tool for Undercutting Grooves Where Cylinder Scores Were to be Filled

The casting was a complicated and expensive one and would justify quite an expenditure of time, aside from the fact that the factory was nearly three thousand miles away and time was valuable to the owner.

I first forged a cape chisel from a 12-in. length of 3/8-in. octagon drill steel, making the cutting edge about 3-16 in. wide and properly tempering it for cast iron. With this chisel I cut a channel, following the path of each score and cutting about 1-32 in. to 3-64 in. deep, starting my work where the scores began and stopping where they stopped. To make a good square job at the ends, I had to work from both ends of the cylinder, taking great care and using a small hammer.

After the four channels were cut, I undercut their side walls to make their bottoms wider than their tops. For this purself-hardening steel and bent one end at pose I took a 15-in. piece of ½-in. square right angles about ¼ in. from the end, grinding it as shown in the sketch, thus making a right and left-hand tool that would cut when pushed along the side of the channel. The tool end was made narrow enough so that only one point at a time would cut. The two ends of the channels were undercut somewhat with the chisel.

Next a piece of sheet copper was cut and filed to an easy but good fit for each channel, the sheet being of a thickness about one and a half times the depth of the channels. These strips were heated to a bright cherry and plunged into cold water to anneal them, after which they were placed in their respective channels and peined into a perfect fit with a small hammer, care being taken

to lock the ends first and then the center by light blows of the hammer.

The job was finished by dressing off the superfluous copper with a large coarse half-round rasp and finishing with a scraper ground to the curve of the cylinder wall.

The complete job proved perfect and held the compression as well as ever and has given no trouble since.

The total cost was eight hours' time at 75c. per hour or \$6, while a new casting would have cost \$45 and taken three weeks for delivery.—H. R. Dunlap, Pomona, Cal.

#### Screw Cutting on a Speed Lathe

A way to cut threads in a lathe having no lead screw or feed gears, or to cut a special number per inch not provided for in the lathe's equipment, is herewith illustrated. It is necessary, however, to have a die and tap to cut by hand a master screw and nut of the desired pitch but they need not be of the diameter of the screw that it is intended to cut in the lathe.

A piece of round stock of the size to be threaded with the die available should be first procured and threaded with the number of threads to the inch which is to be cut afterward in the lathe. This bar must be long enough to go through the lathe spindle, if the lathe has a hole through it; if not, it should be attached to the outer end of the spindle or fastened to the inner end of the live center.

For the master nut, a bar of say ½ in. diameter and long enough to fit the machine, is flattened on one end and tapped to fit the master screw as indicated. The bar must be long enough to make the necessary connection from the center of the lathe spindle to the socket that is fastened to the rod that is connected to the carriage on the lathe. The master nut is secured to this rod in the manner indicated in the drawing and held by set screws. The master nut bar fits into a socket which is drilled at right angles with a 1-in. hole to fit the rod leading to the lathe carriage. One end of this rod is turned down to fit a hole

if the lathe had the proper gears and lead screw. Very accurate work is possible as I have made micrometer screws used in instruments for calipering all classes of work to .001 part of an inch.—Otto Nedvidek, Milwaukee, Ore.

#### **Installing Magneto Magnets**

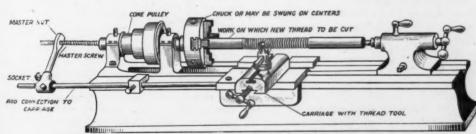
What is the simplest way to tell the north from the south poles on Ford magneto magnets, and what is the correct way to install them on the flywheel?—G. N. Collier, East Walpole, Mass.

#### ANSWER

Ford magnets should be placed on the flywheel in the same order that they are shipped in the box. The ends of the magnets are also marked at the factory, so that if the magnets do get mixed, one can still tell how they should be arranged on the flywheel.

However, it has been the experience of some Ford owners that the marker at the factory sometimes makes a mistake, so it is safer to check up the polarity of each magnet before installing it on the flywheel. When the north pole of one magnet is brought near the north pole of another magnet, no attraction, but rather a slight repulsion is exerted. But the north pole of one magnet will attract the south pole of another magnet very strongly. Briefly stated, like poles repel each other, while unlike poles attract.

These magnets should be placed on the flywheel, so that like poles are together. Thus, two north poles should be together under one clamping screw, then two south poles, then two north poles, and so on around the circumference of the flywheel. By placing two of the same kind of poles together under each clamping screw, the result is a magnetic pole of twice the strength. But if unlike poles are placed together, they will neutralize each other, and the magneto will not give its full voltage. Since there are sixteen magnets, one reversed magnet will cut down the strength



Plain Lathe Without Lead Screw. Adapted for Cutting Screw Threads

in the carriage, being held in this hole by a set screw as shown.

Where the master screw goes through the spindle it is of smaller diameter and is threaded at the inner end to engage in a hole drilled in the inner end of the live center. On the carriage rod is a supporting block, having a hole drilled through it and fitted with a set screw to hold it adjusted on the ways of the lathe, so that it forms a guide for the center of the long bar.

The use of the lathe so equipped will be readily understood, as it will be plain to be seen how a thread can be cut the same as

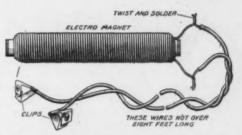
of the Ford magneto about one-eighth. If the magneto gives 8 volts at lowest motor speed, 18 volts at normal speed, and 30 volts when the motor is raced, one may be sure the Ford magneto is in good order and that the magnets have all been correctly installed.

To tell which is the north pole of the magnet, either suspend the magnet on a light thread, so that the north pole can swing toward the north, or else test the magnets with a pocket compass, and then the north pole of the magnet will repel the north pole of the compass.—M. F.

#### Handy Magnet for Fishing

A small and strong tool for fishing out tools, nuts, springs, etc., that drop into the pan or crankcase, or for cleaning broken chips and gear teeth out of recesses in transmissions, differentials, etc., can be quickly made from an old worn-out Ford coil unit and a few feet of duplex wire cable.

No matter if the coil has been punctured, tear off the box and with a screw driver chip off the rubber compound surrounding the coil. Next pull the coil from the iron core, being careful of the insulation on the copper winding around the core, as this is all you need. Cut the two leads about I infrom the end of the core and solder these



Electro-Magnet for Fishing Made From an Old Discarded Ford Coil Unit

to the ends of a duplex cable not over 8 ft. long. Separate the other end of the cable to allow attaching to a storage battery and solder on to each wire a snap test clip for quick attachment to a battery or dry cells. Now tape the magnet stoutly to the cable for protection and to stand pulling and the tool is complete.

Six dry cells or a six-volt battery attached to the test clips will cause the magnet to hang stubbornly on to 5 or 10 lb. of iron. Still greater lifting capacity can be secured by adding more cells of battery in series.—H. A. Kirk, Rensselaer, Lnd.

#### To Remove Detachable Heads

The constantly increasing use of detachable cylinder heads on engines with cylinders cast en bloc makes the method of removing these heads of importance.

We have found that the tool shown on the sketch easily removes the head and, as no prying or wedging is necessary, there is no danger of scratching or scoring either the cylinder or the head and usually the copper-asbestos gasket can be used again.

The tools are made of soft steel and may be of any length to suit; ours are about 6 in. long.

In use two spark plugs are removed and one tool screwed in each opening. After the point of each tool touches the valve underneath the two should be turned at the same time slowly, until the head is released. The handles of the tools will be found convenient for lifting the head away from the engine. On a four-cylinder engine these tools should be put in the first and fourth cylinders, on a six in the second and fifth cylinders.

All of our motors have %-in. 18-thread plugs, so we have only that thread on the

tools. However, for garage work they can be made with \( \gamma\_8\)-in. 18-thread on one end and \( \frac{1}{2}\)-in. pipe thread on the other. The \( \frac{1}{2}\)-in. thread must be cut small and straight so it will go through the spark plug hole all the way.



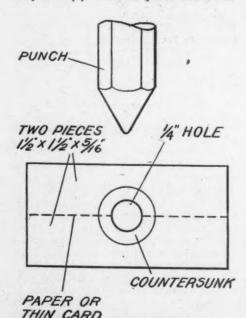
Tool for Starting and Lifting Detachable Cylinder Heads Most Conveniently

A regular ½-in. pipe thread is cut on a taper. The proper thread for the tool can be cut with an adjustable pipe die set to cut just a little deeper than usual.—James W. Cottrell, Hammonton, N. J.

#### Die for Beading Pipe

I have found in beading copper oil pipes that it is hard to get them oil tight. To overcome this difficulty, I constructed a die as in the sketch herewith of two pieces of iron 1½ x 1½ x 5-16 in., which I placed in a vise with a piece of thin card about .02 in, thick between. I then drilled a ¼-in, hole through the two blocks, its center coincident with their abutting faces, and countersunk it to the bevel of the connection to be fitted. Then I made a punch with the point ground to fit the die.

To bead the pipe, I removed the card which allowed the pieces of iron to grip the pipe when placed in the vise. The pipe should not be quite to the top of the beveled part of the die, as this would be likely to split the pipe when the punch was driven



Punch and Die for Flaring Copper Tubing

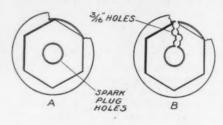
down on it. The best results are obtained by beading a little and then moving the pipe up in the die. This will cause the edges of the pipe to flare out without breaking or splitting.

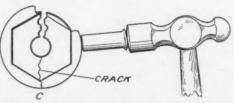
Any size pipe may be beaded by using, to bore the dies, a drill of the same size as the pipe to be beaded. The sizes most used are ¼- and 5-16-in. pipe.—Hastings Bros., Brookville, Ind.

#### Removing Stubborn Valve Caps

It often becomes necessary to take out cast iron valve caps that are either rusted in or have been put in with cement, shellac or white lead. After you have tried heating the cylinders with a torch or running the motor to warm it up and find that it is impossible to screw them out, try the following:

The rim is cut or cracked off with a cold chisel, as in the illustration A. Then with





Stages in the Breaking Out of a Valve Cap That Cannot be Unscrewed

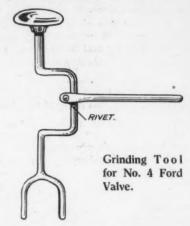
about a 3-16-in. drill, make three or four holes through the cap in a line as at B. Cut between the holes with a cold chisel, making a slot from the spark plug or priming cup hole through to the threads, cracking the last part off in one piece, so as not to mar the threads of the cylinder. Then by hitting the cap with a heavy piece of stock, as at C, it will easily crack in half or bend so that it can be screwed out with the fingers.—Douglas East, Mineola, L. I., N. Y.

#### How to Make a Handy Tap Wrench

The wrench illustrated for holding reamers, taps or any other tools with square shanks is simple to make. Take two solid steel bars one foot long, 3/4 in. thick and I in., from one end of each bar bore a 3/8-in. hole for a 3/8-in. stud bolt, 3 in. long. File a 1/4-in. flat surface from the end of each bar to 1/2 in. beyond the last hole and in the center of each flat surface cut a 1/4-in. notch.

#### Grinding No. 4 Exhaust Valve

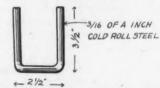
Most repairmen find it more or less difficult to grind the No. 4 exhaust valve on a Ford car because the dash is directly over it. A simple tool can be made to grind it by using a carburetor adjusting rod. With a little shaping the fork end of the rod



will just about fit the two holes in the top of the valve. Then the rod is bent in the shape of a brace, care being taken that it will go under the dash. Enough rod will be left to make a handle. The end of it is split far enough to allow it to slip over the offset of the brace, then the split ends are riveted together to hold it in place. This tool will be found a time saver in grinding that particular valve. The brass knob can be used for a handle on top of the brace.—E. A. Blake, Alma, Mich.

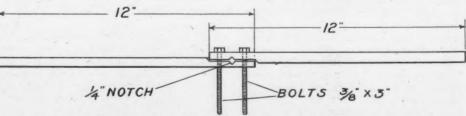
#### Helps Install Transmission Bands

A tool I find very handy for installing Ford transmission bands is a piece of 3-16-in. cold-rolled steel bent in the shape of a square U, 2½ in. wide by 3½ in. long.



U-Piece for Holding Transmission Bands

When everything is ready to put the cover on, the bands are placed on the drums then the U is slipped over the lugs to hold them in place. The cover is then put on and when the band lugs have been entered



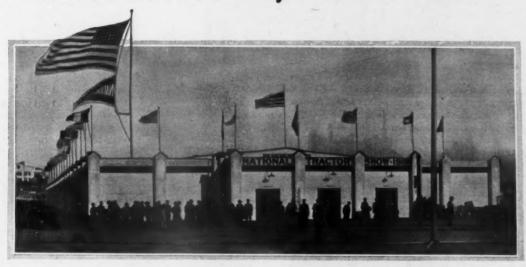
Special Socket Wrench for Holding and Tightening Body Bolts on Ford Cars

This will give a wrench with a wide range of capacity, as it will hold square shank reamers, etc., from ¼ in. to 1 in. square. Moreover, it is very quickly adjusted and is very strong.—"A Subscriber."

in the proper place, the U tool is pulled out through the inspection hole. This will be found a very handy and time-saving tool and far ahead of the old way of using cord.—E. A. Blake, Alma, Mich.

# TRACTOR JOURNAL

# Future of the Tractor Industry Visualized at the Kansas City Tractor Show



Dealers and Farmers Throng Show Building. Over Twenty Million Dollars Worth of Business Transacted During Week. Standardization Making Inroad on Tractor Design. Plans for Next Year's Shows Already Under Way

HAT the tractor industry has gotten into the national limelight by leaps and bounds was clearly indicated by the tremendous interest displayed by dealers and tractor prospects at the Third Annual National Tractor Show, which was held from February 11 to 16, at Kansas City. This show closed its doors Saturday night after one of the most successful and eventful weeks in the history of tractordom. It was the greatest aggregation of farm tractors and power farming machinery that was ever displayed under one roof, and it is significant that 98 per cent of the tractor makers of the country were represented. A few well known makers, including Holt and Ford, were absent, but they had a legitimate excuse for not attending as their factories are practically tied up with Government work.

cuse for not attending as their factories are practically tied up with Government work. The show was interesting to the prospective tractor dealer, the tractor engineer and to the ultimate consumer, the American farmer. The dealer had an opportunity to inspect the various models and also find out which companies had tractors to sell.

Although the ultimate type of tractor distributor idea has not been settled as vet. a week's attendance at the Kansas City Show would convince anyone that the automobile and motor car dealer displayed an unusual amount of interest in the tractor. Many tractor manufacturers who formerly did not consider the automobile dealer seriously, actually signed up with this type of dealer at the Kansas City Show. And it is equally true that many dealers and individuals who attended the show for the purpose of getting an agency were disappointed for the simple reason that many tractor makers cannot meet their production schedule on account of the unexpected demand for tractors brought about by the war. On every side one heard the statement: "We could easily sell twice as many tractors this year if we had the parts; if we could only get the transmissions, engines, etc." A great many makers are experiencing difficulty in obtaining transmissions and engines, thus making it practically impossible for them to live up to production

To the automobile show visitor who is accustomed to attend the National Automobile Shows, a trip to the Kansas City Show was an eye-opener. It was replete with novelty and interest. And when the Show ended, it is doubtful if any set of show managers ever received any greater number of compliments from the exhibitors than did the men who ran the Kansas City affair. The show was not run by individuals for profit, but by a group of men who had the vital interest of the business at heart, and went at it in that spirit and achieved unquestionable results.

About the second day of the show a great deal of talk was permeating the atmosphere of hotel corridors and wherever a crowd of men gathered to the effect that the Third Annual National Tractor Show would evidently be the last one held in Kansas City. It was rumored that an eastern show representative was seen pussy-footing around town with the intention of moving the show next year to Chicago or New York, possibly. The fear, however, of all concerned was allayed when the date for next year's

show was announced on Tuesday night of show week and again at the Society of Automotive Engineers' meeting on Wednesday and the Kansas City Tractor Club Smoker on Thursday night. Practically without exception, the exhibitors were perfectly satisfied with the result obtained in Kansas City. A great many indicated this fact in a practical manner by signing up for space for next year's show, which, from all indications, promises to out-shadow even the past event.

#### **Rush Show Building to Completion**

As an example of how the Kansas City Tractor Club does things, a few words on the building\* which housed the show might not be amiss. As there was no suitable building to house the tractor and accessory exhibits, a specially constructed wooden building had to be erected on the Union Square Plaza, just across the street from the Station. It took just four and one-half days to complete the building and it was ready for occupancy six days after the first upright was placed. When the building was first planned it was thought that an 80 x 400-ft. floor space would be sufficient, but before the plans were under way it was necessary to increase the size of the building to 112 x 450. It took 350,000 ft. of lumber to build the structure. The building was heated by kerosene burning stoves, and lighted by electricity. The thirty members of the Kansas City Tractor Club purchased practically \$18,000 worth of space for themselves.

It is gratifying to learn that among the Kansas City show members, all of whom belong to the local club, knocking has been tabooed altogether. It is no doubt true

that this Club has done more for the good of the industry by eliminating this pernicious practice of slamming the other fellow's product than any other body of men in the industry. And it is this same body of men who are responsible for the way in which the Kansas City Tractor Show was put across. All tractor manufacturers should get into the same spirit!

#### Many New Models Shown

Every conceivable type of tractor was on exhibition and a number of models made their first appearance. These new models, as well as new accessories and parts, will be described and illustrated in future issues of this Journal just as soon as proper illustrations and material are available. In a great many instances the manufacturers have to work night and day to get their show models ready. Among the concerns which exhibited new models were the Acme Harvester Co., Hart-Parr Co., Sexton Tractor Corp., Kansas City Hay Press Co., Fairbanks Morse Co., J-T Tractor Co., Pan Motor Co., John Noble's Automatic Tractor Co., Velie Motor Co., Parrett Tractor Co. and the R & P Tractor Co. The R & P tractor is described in detail in this issue.

The Trojan, exhibited by the Inter-State Co., is one of the new comers in the tractor field and created considerable attention, due to its particular rear axle construction. This is a live axle job, using a Foote gearset, rear axle and rear wheel design. This new model is claimed to have extraordinary power which is limited only by the size of the engine. This model will shortly be put through severe tests and quantity production started late next summer.

The Kaufman-Parrett Co. showed a new Parrett model which somewhat resembles their present model. The new model has a new design of gear box, having three speeds forward instead of two. Other features of this model are enclosed internal gear drive to the rear wheels, and a new Buda engine with force-feed oiling and detachable cylinder heads.

The Pan Motor Co., of St. Cloud, Minn., exhibited the new Pan Tank tread tractor. This model is powered with a 4-cylinder 4½ x 5½ Buda engine. It develops 12 h.p. on the drawbar and 24 on the belt. It is fitted with Kingston carburetor, Borg & Beck clutch, ball type governor, K-W ignition and Hyatt bearings.

The John Noble Automatic Tractor fathers a new idea in tractor construction. This machine is designed particularly for work on hill side farms. By means of a pendulum arrangement the tractor is automatically kept level, one front wheel rising sufficiently and thereby permits the wheels to exert uniform and maximum power under all conditions.

The Fairbanks-Morse Co. exhibited the Fair-Mor 10-20, which is the name under which this company is selling the Vail tractor built by the Vail-Rentschler Tractor Co., of Hamilton, O. Three hundred of these machines will be built.

Among the accessory exhibits were found many innovations, such as new drawbar clevices, lighting systems, air washers, ignition apparatus, automatic electric throttle control, etc.

Many of the tractor companies kept their tractors operating by means of electric motors, so that the farmer and student of tractors could study the operation of the engine

Officers and Directors of the Kansas City Tractor Club



E. T. Anderson, President



Guy Hall, Manager

\*This building was destroyed by fire three days after the show closed. Fortunately, all exhibits had been removed. The building was burned to the ground in twenty minutes. Part of the building was being remodeled into a clubhouse for visiting soldiers and sailors. The remainder was being torn down to be moved to Camp Funston, where it was to be used in constructing a gymnasium for soldiers. Thirty workmen employed by a local house-wrecking company were in the building when the fire broke out. The estimated loss on the building is \$17,000. It was insured for \$10,000.



J. A. Keating



H. E. Lewis



M. R. Voorhee



W. R. Ellis, Chairman

and transmission. It goes without saying that these exhibits naturally attracted considerable crowds.

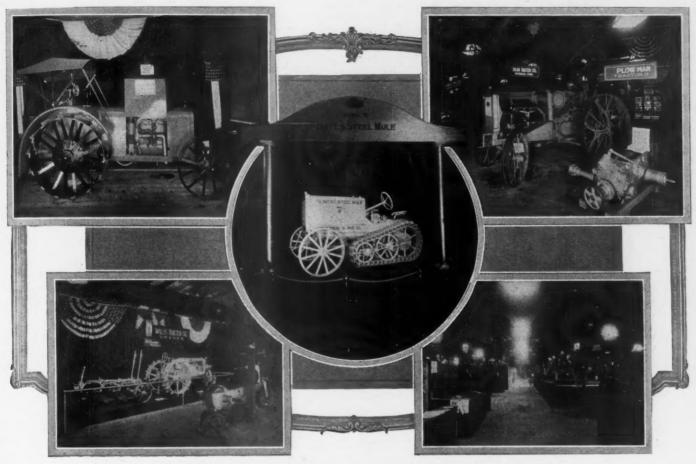
The Emerson-Brantingham Co. showed a sectionized power plant which was kept running by electric motor, while the Avery Co. also had a similar exhibit. The Bates Steel Mule was well displayed on a revolving platform. Quite a few of the exhibitors entertained their visitors with moving pic-

low enough from the ceiling so as to be easily read. They were made of green cardboard lettered in white. They were simple, effective and inexpensive.

#### The Trend of Design

A survey of the mechanical features of the tractor exhibits at the Kansas City Show did not reveal anything startling or radical in design. Air cleaners are being fitted on He talked on standardization and what it meant to the farmer.

Capt. F. M. Munroe, of the French Army, gave the audience some interesting sidelights on the importance of the tractor in military maneuvers. He told how a double line of tractors and motor trucks was used to bring up ammunition during the siege at Verdun. The machines were working continuously for twenty-four hours at a time.



A Few of the Exhibits: Just to Give a General Idea of the Tractor Show
Upper left, new Sexton job; upper right, new Trojan; lower left, the Wallis exhibit; a view down one of the aisles; and the
Bates Steel Mule on a revolving platform

tures, which, besides creating interest, also provided a means for illustrating to the prospect how the tractor or implement, as the case may be, actually performed in service.

One of the exhibits which attracted considerable attention was the display made by the S. A. E., showing a Liberty engine such as is used in the Liberty Truck.

#### The Decorations

Naturally, a wooden structure such as housed the show does not lend itself very readily to extensive decorating, still the simple decorations that were used lent an irresistible charm to the colorful background of the tractor displays. A glimpse of the show revealed a riot in color workcarmines, brilliant reds, all shades of gray, blues, greens, and yellows were intermingled in such a manner that the scene was very refreshing to the eye. Electric lights covered with mission style lamp shades dotted the aisles and afforded ample illumination. The uprights were covered with bark and topped off with leaves and smilax, producing a very pretty effect. The booth signs were all the same size and were suspended practically all machines, the manufacturers having realized that this feature has become a necessity. Open gearing is still much in evidence, although many of the companies who are building tractors without enclosed gears, have new models under development in which all gearing is covered and runs in oil. Reduction in weight is noted in many machines, while some of the new models show great reduction in weight per horsepower developed. The tendency seems to be towards four wheels, there being more four wheel jobs shown than last year. Electric lighting outfits are being fitted to quite a few machines, while a number of makers are making provisions for the addition of an electric starter should the farmer desire it.

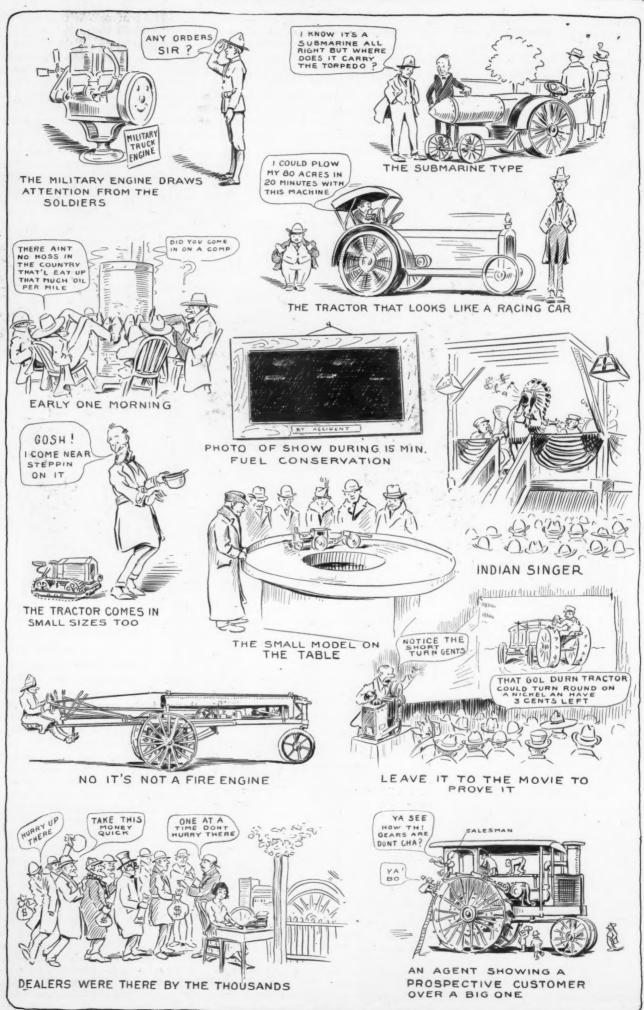
#### At the S. A. E. Dinner

Nearly 200 attended the S. A. E. tractor dinner which was held Wednesday, February 13, during the Kansas City Tractor Show Week. The dinner, which was the second function of its kind, will hereafter be an annual event.

Dent Parrett, president of the Parrett Tractor Co., of Chicago, was toastmaster. Dean Jardine, speaking for the State Council of Defense, pictured the condition existing in Kansas relative to the depletion of man power on the farms. Twenty-five thousand men have already been taken from Kansas to the first camps and twenty thousand more would be called by the next draft. The loss of these forty-five thousand men must be made up by the use of tractors. He stated that most tractors only work fifty days in the year, whereas they should work one hundred and fifty.

J. B. Bartholomew, president of the National Implement & Threshermen's Association, stated that the congested condition of railroad traffic has made it impossible for some makers to deliver their machines. Three thousand cars, he said, would not be sufficient to take out the finished tractors, while many makers have been waiting over a month for freight cars.

Arnold P. Yerkes, assistant Agriculturist, of Washington, D. C., asserted that nearly ninety per cent of the tractors' ills are due to incompetent operators. He made a plea for agricultural engineering courses in State colleges.



# Thoughts of Prominent Men on the Tractor Show and Industry\*

R. Musselman called the guests to order at the close of the dinner as follows: Now, our Government fully realizes that in addition to the necessities for speeding up the production of munitions, which unfortunately are for the purpose of killing and maiming, that our next important step is the building up of an industry which is to save lives by feeding them. The tractor industry has a great responsibility and you gentlemen have a great responsibility. Government has asked you to consider seriously the manufacture of as many tractors as it is possible to build, and when it asks the tractor manufacturer to do these things, it also holds true that it asks the parts manufacturers to play the important role that is necessary in this great tragedy.

America has a wonderful slogan; it is advertised on the walls and fences everywhere, and public buildings, and you see it from coast to coast, from the Gulf of Mexico to Canada. America is spending millions of dollars, and the slogan is "Food Will Win the War." This slogan further emphasizes the need for the get-together spirit in the industries which are allied with the tractor

business.

#### Importance of Parts Manufacturers

We have with us tonight a great many parts manufacturers. These gentlemen are going to play a very important role in the development of the tractor because if there are many standardized parts available it means that the production can be speeded up, and gentlemen, I want to say that it is a patriotic duty as well as a business enterprise to see that the production of tractors is speeded up to the maximum. It is the only salvation, for the tractor is the only thing that can take the place of the lost man power in producing food which is necessary, not only to the present generation, but to the future generation.

I want, therefore, to suggest that we all of us for the time being forget the competitive feature of the tractor industry. It is a big enough industry to grow for ten years as rapidly as anybody can expand it or any number of us can expand it, and during those ten years we can all be true to our pledge to help create more food by mechanical means and at the same time we will not suffer as a result of competition. The slogan of the American Government is "Food Will Win the War—Don't Waste It!" Gentlemen, I hope our slogan will be "'Food Will Win the War—We'll Make it!"

It is my privilege and pleasure to present to you the Toastmaster of the evening. He is known to most of you, but as there are those present who are not quite as intimately connected with the implement trade as many of Col. Brinton's friends, I take pleasure in introducing and presenting Col. Brinton. (Applause).

The Toastmaster: Gentlemen, this is a

The Toastmaster: Gentlemen, this is a very great pleasure to me; in fact, I came all the way from Washington to get my

first meal from a publisher for nothing. (Laughter.) My experience with the publishers of the advertising type has been that the money all goes the other way, and I could not deny myself of an opportunity to get even. (Laughter).

Before I introduce the next speaker. I want to pay a compliment, if I can, to the gentlemen who have made it possible for us to be here in this room and to have enjoyed a get-together dinner, as they call it. I have attended some banquets during my short career and I have never attended a more delightful one than this. Before introducing the first speaker of the evening I have a letter from the Governor, who sends a representative to talk to you on this occasion, and I am sure that you will all be pleased to hear him-Col. Enright, who will represent the Governor on this occasion, I have the pleasure of introducing to you Col. Enright. (Applause).

Col. Enright: Mr. Chairman and gentlemen: It is not often that I have had the occasion to represent the Governor of a great commonwealth like this, the state of Missouri. I hope you at least will deal with me in charity and not say, "It's too bad, the Governor sent a boy to mill."

I have the distinguished honor and pleasure of administering the Blue Sky Law, which is a splendid law and while no doubt I may have been criticised somewhat, I intend to be criticised a great deal more before I get through, because there isn't any place, especially in times like these, for the printing press enterprise, but I want you to say to everybody that wants to come to Missouri and launch a legitimate enterprise, and especially at this time, the most desired one, the tractor enterprise, we will welcome him and them with open arms and give them every financial and other assistance that they may crave.

I hear something said about the possibility or removing the tractor conventions from this magnificent metropolis to some other city. I should regret that very much. In the infancy of this enterprise, Kansas City welcomed you and did everything in its power to foster it and now that it is beginning to show that of a healthy child, it ought to be continued here. I guess it cannot be successfully contradicted or gainsaid that Kansas City is the first city of this country in the distribution of agricultural implements.

#### State Will Aid Tractor Makers

Let me reassure you that the State of Missouri will not be outdone by any commonwealth in this country in fostering, in helping in whatever way we can, the tractor enterprise. We've got the location, we've got the money, here's where the men come that buy 'em, they come here with their hogs and their cattle to sell 'em, they come here with their grain, they come here to buy their agricultural implements, here's headquarters for 'em, here's the natural head for 'em to come to market. You miss it if you go any other place.

The Toastmaster: The gentleman who will now talk to you as a tractor manufacturer may very properly be called the Bull Moose of the tractor industry—Mr. Bartholemew. (Applause).

Mr. Bartholemew: Mr. Toastmaster, the Chilton Co., gentlemen: I think before I go further, that we'd better accept the Colonel's invitation to dine with him as soon as he's got money enough, and appoint Mr. Finlay B. Mount as an auditor to look over his books occasionally and notify us in advance so we can be prepared. And I know that Mr. Mount would like to look at his books!

I want to say, gentlemen, that it is quite a gratification to me to hear a banker make the statement that the gentleman before me made. Less than three years ago those who have been in the tractor industry will remember that the bankers throughout the Northwest and Southwest, some opposed most bitterly the purchase of tractors on the part of the farmers and would not loan them money for the purchase of tractors. So here we are, three years afterwards, offered every encouragement, at least from the State of Missouri, and I believe that prevails pretty much throughout the whole country.

#### Tractor a Cash Business

Tractors are going to be sold on a cash basis. There isn't any question in my mind about that. There has been some business done that wasn't on that basis. It's been done through the pioneering stage, and the subject to approval stage, etc., but no tractor manufacturer needs to be told that cash is about the only basis upon which he can legitimately and fairly operate.

There is an old adage that experience is a good teacher, but very expensive. Do you realize that back of the tractor industry stands the greatest monument of failures that almost any industry of modern times can show? Yet out of all of it has come

The tractor industry is suffering—that is only my personal view, gentlemen—from inside elements which could be improved.

I have wondered sometimes if the manufacturers and salesmen in the tractor industry fully realize the depressing effect of their own influence against the industry. I feel that the time has come, that we have emerged from the period when tractor people themselves can afford to decry the tractor and the methods of their competitors and refer to the competitor's tractor as junk.

#### Mr. Bartholemew's Idea of a Tractor

The component parts of the motor must be ample in size and its bearings must be liberal in proportion, and this does not seem to spell extreme light weight nor very high speed. It must be simple in design and construction, easy to understand, cheap enough in its first cost and the cost of upkeep to enable the farmer who buys it to do his farm work and make money out of it.

<sup>\*</sup>Extracts from speeches made at the Get-Together Tractor Dinner, given by the Chilton Company.

It must burn kerosene for fuel; it must be provided with an apparatus that will convert that fuel into gas that will all explode and burn up; simply using kerosene by smoking it out of the exhaust or blowing it by the piston is not the answer, and if it is not sold on the proposition that it will burn kerosene—it will.

Tractor operators must learn to use tractors in a tractor way. It is not always practical to do the work with the tractor in the same manner as has been done heretofore with horses, and the adaptation of many sorts of farm implements to be used in connection with the tractor is still to be made, and when the tractor farmer makes his readjustment to the tractor system of farming and some of the implements themselves are provided with means whereby the tractor operators can also operate the implements without leaving the tractor, still greater success will be attained.

The manufacturers are easy to make friends with. We want to get acquainted with the automobile publisher, we want to go by the slogan that you hear or I understand it goes down here in Missouri, "Get acquainted with your neighbor, you might like him."

#### Mr. Yerkes of United States Department of Agriculture

Mr. Yerkes: It is worth the time of anyone interested in agriculture to keep in touch with all kinds of farm machinery, and there is no better place to get a better view of the tractor industry than those exhibits and shows held here in Kansas City, which I hope are going to be held right on here in Kansas City.

There is not quite the change in designs this year that some people have expected, the radical changes.

There was a while when the farmer had to almost hurry home with his tractor in order to get it there and get it to working before the style was changed and the manufacturer who made it had adopted another model so he couldn't get repair parts for it.

It is quite a little bit different now. When it comes to telling the tractor manufacturers anything, I think of that little verse:

You can always tell the English, You can always tell the Dutch, You can always tell the Yankees, But you can't tell 'em much.

I am sorry I didn't know sooner that I was coming out here and was going to be called on to talk, because there are lots of things going on down in the Department of Agriculture that I know you would be interested in and everyone in the country would be interested in. The work is going on quietly there.

The tractors on the market now, if properly handled, are going to be a tremendous factor in producing food this year, and there will be a whole lot of tractors produced as long as the market remains normal, because the farmer this year has money to buy machinery and he's going to keep right on buying machinery as long as he has money and is short of labor, and there never was a time in the history of this country when conditions made it easier and more important to sell machinery than right at

present. Last year the farmers gave up their farms because they couldn't get help, the help all went into the munition factories at five and six dollars a day, some building cantonments were getting eight and ten dollars a day including over-time and some of them went in themselves to get some of that easy money because they could make more money there than farming. It will, therefore, surprise you to know that on hundreds of farms there was more food produced than that farm had produced before in its history, and with less men doing it!

It wasn't because they were working more in all cases—they did work harder, as a rule, put more energy into it, had their hearts in it more, but they were using more improved machinery and using machinery to better advantage; buying bigger machinery in a great many cases. I know a good many manufacturers have felt that trend toward a little larger size.

A great deal of our improved farm machinery doesn't cut the cost, but one man is doing that work where they'd have to have ten or a dozen if they did it with a method which might cost a little less per unit of work

#### Telegram From H. L. Horning

"Military events pending make it clear to me I cannot attend the dinner to which you have invited me. The world is looking to the Mississippi Valley and particularly to Kansas with their wheat production for a substantial contribution of food this year. Tractor builders and agents, inspired by the fine ideals of patriotism, can contribute a service no less important than that of an army.

"Farmers should buy tractors now to the full extent of their resources. Manufacturers, dealers, agents should make a concerted and consistent effort to see that the tractors they sell give one hundred cents worth of service for one

"We need all the tractors of every reputable make on the soil. Next winter does not look favorable at the best. July plowing this year must be rushed wherever possible. To produce all the food possible and then some is the task that Kansas can do, as other states must do to help win the war."

(Applause)

Mr. Bacon: I want to call your attention to the fact that ever since the United States Government has been keeping a record of farm products, the average crop increase, the average crop per acre has not increased the iota. There can be only one of two answers: The first one is that the improvements in farm machinery are not living up to their reputation, or else the farmer doesn't know how to use them.

Now, it would ill become me to say that the improvement in farm machinery is not what it is said to be, because it is. It is even more, and when the farmer understands how to use those machines, gentlemen, we will see an average increase in our crop production, and that is what every member of us must see and that in 1918!

Most of us know that we have at the present time a reduction of sixty-eight millions bushels of crops less than we had four

years ago. We are confronted with a shortage of seventy millions bushels of wheat. That's why we are having our wheatless days. Now then, gentlemen, unless something is done in 1918 to offset this shortage of food production, the wheatless days that we are experiencing at the present time will be Fourth of July picnics compared to what we will have to suffer in 1919.

We are going to win this war by more food; it is up to the farmers to grow more food, and how is he going to do it? He is going to do it by a more intelligent use of the tractor and tractor plows.

#### \$700,000,000 the Farmer Didn't Get

The United States Secretary of Agriculture says that we spent forty million dollars worth of corn for the wheat crops. He goes on further to say that seven hundred million dollars worth of food products were fed to the different types of grubs. Now, if it is possible, gentlemen, with the proper use of the tractor and tractor plow to put that seven hundred million dollars in the farmer's pocket where it belongs, then I say the thing that we must do at the present time is to get such information as that before the farmer.

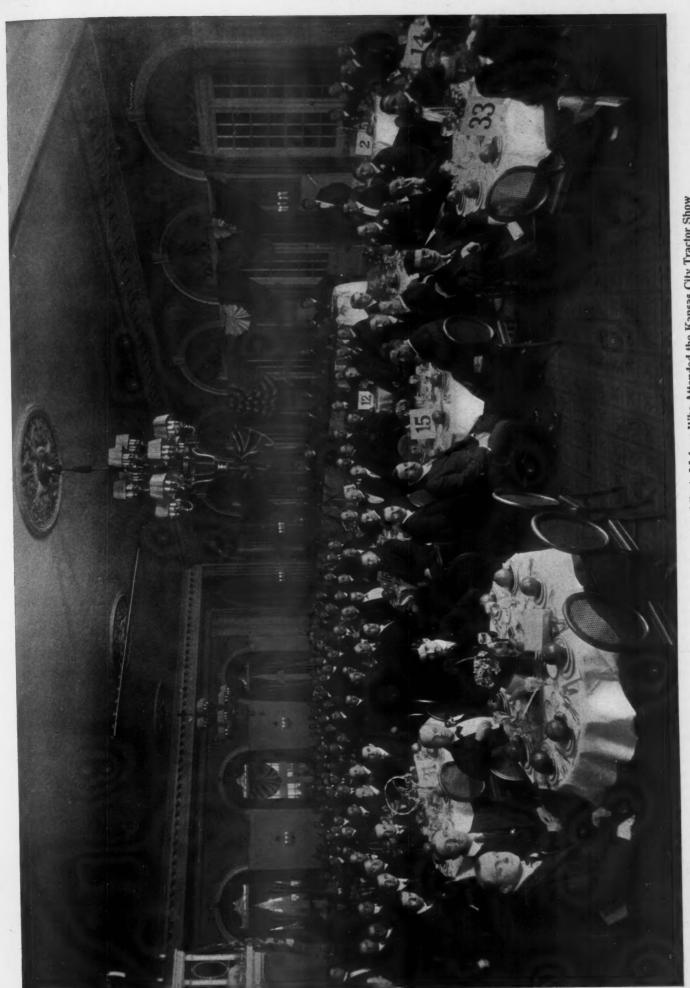
If we put this information in their hands that will enable them to use this tractor and tractor plow to great profit, there will be no question about the rapidity with which the tractor and tractor plow will advance.

I want to call attention to another fact. Last year there was less than two per cent new ground cultivated or plowed more than was plowed in 1915, and fourteen per cent more than was plowed in 1916; 1916 was a wet year. Now then, if we are not going to get our increase in crops from new ground—we haven't the help to do it in the first place; we haven't the machinery to enable us to plow the ground in the second place—so the only hope we have, gentlemen, in getting an increase is out of the ground we are now cultivating.

I want to leave you this one thought, gentlemen, that the seven hundred million dollars that we are feeding into the insects is legitimate profit and would certainly make a nice little item of business for tractors and tractor plow business.

## Mr. Mount Agrees to Audit Colonel's Books

Mr. Mount: I have been here all week attending this perfectly splendid exhibition of Kansas City nerve and enterprise. The tractor show means to me an expression of what the Kansas City Tractor Club can do and has done. I didn't quite have my bearings this week, I looked for a familiar face and found it not, but when I came here this evening and saw who our toastmaster was, I know then that the show might go on. Whether Col. Brinton intended by this surreptitious and unexpected call upon me to speak to impeach my integrity on that little auditing proposition which I have been appointed to perform, I know not. I can assure the Colonel, however, as well as Mr. Bartholemew, that the auditing will go forward with neatness and despatch on the first occasion offered. (Laughter).



The Get-Together Dinner of the Tractor, Implement and Parts Makers Who Attended the Kansas City Tractor Show
Given by the Chilton Company, February 15th, at the Muehlebach Hotel, for the purpose of producing increased harmony and a better understanding among the kindred industries in the tractor field,
with a view toward producing better tractors, and increasing production

The Toastmaster: Like the usual lawyer, he built up a very good case and it looks as if at some time in the future I am likely to be stuck.

#### Mr. Hall Pleads for Get-Together Spirit

Mr. Hall: I want to welcome you all to Kansas City, and I want to thank the Chilton Company for this opportunity. We certainly appreciate your coming here and we're glad to have an opportunity to show you a little bit of our Kansas City spirit.

Referring to the Kansas City Tractor Club, you manufacturers will not take it amiss when we say we'd like for you fellows to get together a little bit like we get together in our Tractor Club.

In the first place, we lay the cards on the table. Now, in getting together, we think that you fellows that have patents ought to

forget them. We think if you magneto men have an improvement on your magneto that could be put on the magneto of somebody else, that you should give it to the other fellow and let us farmers have it. Mind you, we're not telling you how to run your business, it's just a little constructive criticism.

You know you are going to sell all the tractors you can make. Europe is crazy for your tractors.

But seriously now, if you manufacturers would honestly get down like we do here in Kansas City and be fair with one another you can do it, you an just be as fair as we are here with each other on a competitive jobbing and branch manager basis. If you could actually do that you could do more for this tractor industry than anything in the world.

There is a little cream on the surface that are buying tractors, but the big, vast quantity, that forty-five to fifty thousand men who have been running around that tent all week, are all going to buy tractors and would buy them right now if you fellows could tell them together that they are right and we know they are right now, and get that confidence back. It's there and it's up to you fellows to get it. You can do the most good by getting together like we have done here in Kansas City.

As to the rest of the show, we haven't anything to say about that except that incidentally you fellows all signed that paper this afternoon, that Mr. Smith and I passed around. We said, "Just sign this—its just an endorsement of the show and all that," but honestly, fellows, you signed a requisition for space next year. And it's all sold!

#### Made-in-America Tractors Gain Ground in Foreign Countries

According to a series of reports made to the Department of Commerce, the use of American tractors is greatly increasing abroad. In Switzerland the larger peasant associations have recently shown an interest in American tractors and tractor plows, acting as purchasers of these machines and renting them to farmers who are unable to buy outright.

Several competent Italian rice cultivators have stated that they did not consider American tractors altogether suitable for the requirements of the uneven Piedmontese land, on account of their structure. It is now worthy of note that a well-known American company, after careful study, has succeeded in eliminating from its tractors certain features which had previously militated against their successful operation on the the land in the Piedmont district. Appreciation of up-to-date American machinery has found its way principally among the rice cultivators of this consular district, and this leads to the hope that a more extensive business in American agricultural machinery will develop in the future. Late experiments with American tractors have proven them to be the best existing appliances from an economical standpoint.

A notable development can be foreseen in the adoption of modern agricultural appliances in Italy, and considering the good results that have been obtained with American machinery, it would be in the interest of manufacturers to turn their attention to this section. As a first step toward future business, they should supply printed matter giving details of their products in the Italian or French languages, preferably the former, for distribution among Italian cultivators.

#### South Africa Offers Opportunities

The South African Government is curtailing imports with a view to conserving all available shipping space for necessaries. Nevertheless American products are more easily obtained, and a good foundation for future trade should be established.

Medium sized tractors with good power, capable of being utilized for traction plowing and various farm purposes, should be Tractor Co., Fond du Lac, Wis.

successfully operated here. The tractor should be easy to operate and as nearly "foolproof" as possible. Arrangements should be completed for thoroughly instructing purchasers. Spare parts should be easily obtainable.

Great care should be exercised in granting exclusive agency rights. Importing dealers in agricultural machinery and implements are usually the most satisfactory representatives, as they generally have various branches or connections, and have an established trade in farming communities.

#### Conditions in New Zealand

Reports from New Zealand state that the demand for tractors at Christchurch is not large at present, but in the course of a year or two there should be a market, as this district is not only most suitable, being practically flat, but most of the grain is grown here, which necessitates considerable labor. If an American manufacturer is able to offer good machines at a reasonable price, it should be possible to develop a good trade here.

#### Michigan Conducts Tractor Course

Michigan Agricultural College is conducting a tractor course for the benefit of the men who expect to operate tractors on Michigan farms in 1918. A battery of a dozen engines, both steam and gas, has been installed and instruction will be given on their care and operation. Candidates are enrolled for this course in the department of farm mechanics. Prof. H. H. Musselman is in charge.

In the description of the Twentieth Century Farm Horse tractor attachment that appeared on page 66 of the December issue, it was stated that the Ford rear spring was removed in attaching the unit. This was an obvious mistake, inasmuch as the illustration showed that the springs are not disturbed. The company that produces this attachment has changed its name from the Farm Tractor Co. to the Fond du Lac Tractor Co. Fond du Lac Wis.

## Returned Soldiers to Operate Tractors

Returned soldiers trained as expert operators by the instructors in the vocational training centres of the Military Hospitals Commission, will run the tractors of the Ontario Department of Agriculture on the farms of Ontario this year.

There will be 130 Government farm tractors in operation next spring and Canadian, soldiers who have done their bit overseas will get the first call, providing they have secured the proper training in the Motor Mechanical branch of the hospital training schools. The Motor Mechanical course offered by the Military Hospitals Commission to men whose disability makes it necessary for them to learn a new occupation, requires from six to eight months. Many have already finished the course and it is pointed out that it has been particularly attractive to men who were formerly ordinary farm hands.

Courses in motor mechanics are being conducted in the vocational training schools at London, Whitby and Kingston, Ontario, and no less than sixty motor farm tractors have been sent to these centres by the Ontario Department of Agriculture to be overhauled this winter. This action on the part of the Provincial Government has been very fortunate and timely, because, while crippled motor cars are quite easy to procure for practice work, tractors in need of overhauling have been scarce.

Ford Tractors for Canada—The Government of the Dominion of Canada has purchased a thousand Ford tractors, and has secured an option on another thousand. Delivery will not begin until the end of March. Through the sale of these tractors to the farmers, at an average cost of \$800, it is hoped to overcome the shortage of farm labor in the Canadian northwest.

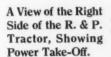
## R. & P. Tractor Shows Marked Simplicity

Clever Transmission Design, Accessibility to Rear Axle Assembly, Skillful Drawbar Arrangement, Special P-T Traction Wheels and Extremely Simple Control Are Among Features

NE glance at the new R & P tractor, recently announced by the R-P Tractor Co., of Alma, Mich., is sufficient to reveal the clean-cut design and simplicity in construction which characterize it. Several new and distinctive features are incorporated that

the differential. This gear reduction of course takes the place of the usual bull gear on the drive wheel or the chain drive, both of which are generally exposed to the destructive action of mud and dust. By removing a cap on the differential housing access to the differential gears is quickly

and construction of the tractor. The rear axle, with the exception of this feature, is the standard Torbensen internal-gear type with speed reductions in the differential bevels and in the final internal gear drives at the wheels. This type of final drive is being followed by many of the automobile designers as satisfactory in lengthening the life of the tractor's working parts.





The Left Side Shows How Simple, Compact and Sturdy the R. & P. Tractor Appears.

are designed to give the machine a longer life and to increase its range of performance.

The use of the special P-T pad wheel on the drive axle is important. These tractive wheels are of Italian design, having been developed by two Italian engineers, Pavesi and Tolotte. They incorporate the self-laying track principle, with ample provision for lugs to increase traction. traction pads are held against the wheel rim by springs instead of being pivoted in it. Two pads are flush with the ground at one time and the rim of the wheel simply rolls over the plane surface formed by the pads. There is not supposed to take place any sliding action between the pads and the wheel rims. The construction of this wheel was fully explained and illustrated on page 73A of the December issue of the COMMERCIAL CAR JOURNAL.

The effectiveness with which this wheel serves its purpose permits the use of a much smaller drive wheel than usually required to obtain sufficient traction without packing the earth unduly. A low center of gravity therefore is the resulting feature. This makes the tractor suitable for work on hillsides and on uneven ground.

#### New Transmission Evolved

The method of gear reduction used in the R & P tractor is new. The power is transmitted from the engine crankshaft through a propeller shaft to a special large internal gear reduction located directly in front of

and easily obtained. The gears can also be easily removed in this way. The internal gear reduction directly in front of the differential can be taken out by removing the cap from the gear housing.

The transmission scheme was worked out by Mr. Parsons, who supervised the design

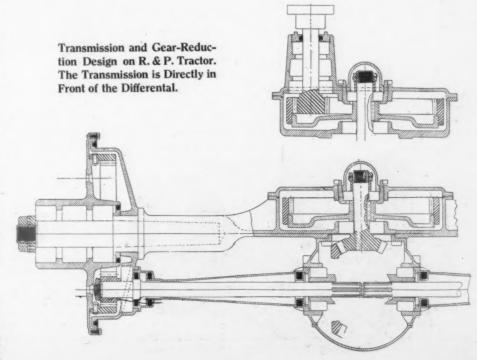
#### Working Parts Inclosed

All the vital working parts are inclosed and run in a lubricant held in oil-tight cases protected by felt washers. A compact arrangement of the rear construction is secured with the advantage of a solid I-beam load axle.

By removing the floor board under the feet of the operator the rear axle assembly is made easily accessible, and all the working parts can be removed from the solid I-beam without detaching it from the chassis. The live axles and internal drive pinions can be withdrawn laterally by taking off the rear wheels.

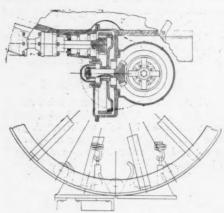
Another feature is the clever way in which the drawbar is suspended. There are four seperate members attached to the frame at different points and supporting the drawbar through a compression coil-spring which absorbs the shock and vibration between the tractor and its load. A range of adjustment of from 10 to 20 in. above the ground is provided for in the drawbar.

To enable the operator to easily maneuver into proper alignment for belt work the pulley is placed on the same side as the steering wheel, i. e., the right side. When the pulley, which runs at the same speed as the engine, is not in use, it can be removed and the shaft covered with a cap.



The frame is attached to the front axle through a swivel joint which provides for distortion up to an angle of 35 deg. The low center of gravity, however, makes locomotion safe even at this angle.

To effect simplicity and eliminate all dispensable gages and connections, the fuel tank is located under the hood at the rear of the engine. There is a large filling cap in the top of the hood. To prevent dust from entering the carburetor a Wilcox-Bennett air cleaner is provided.



Cross Section Through R. & P. Power Transmission

The ratings for the R & P tractor are 12 drawbar horsepower and 20 belt horsepower. It is of the 4-wheel type with the drive wheels at the rear. The overall dimensions given are: length, 108 in.; width, 65 in.; height, 60 in. The wheelbase is but 70 in., so that the tractor is capable of turn-

ing in a circle of 22 ft. in diameter. The weight is 3500 lb.

A 334x54-in. Waukesha engine, running at a normal speed of 900 r.p.m., is used. The governor is a Waukesha. Ignition is provided by an Eisemann high-tension magneto and an armored radiator with a 9-gal. capacity is the means of cooling the engine.

The frame is pressed-steel and heattreated. The belt pulley for power takeoff is 8 in. diameter, with a 7-in. face.

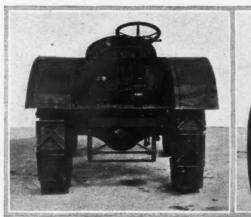
The drive wheels are 40 in. diameter with II-in. face; the front wheels have a diameter of 32 in. with a 6-in. face. The live rear axle assembly is known as the R & P double reduction tractor axle. Transmis-

sion is the Fuller selective type. Three speeds forward and one reverse are provided—forward being 1.35, 2.35, 4.35 m.p.h., and reverse 1.35 m.p.h.

The R & P tractor is brought forth as a machine suitable for both road and field work. It takes its name from the men in back of it—Frank W. Ruggles and Channing Parsons, who designed the tractor. Mr. Ruggles is also well known as the president of the Republic Motor Truck Co., Inc., of Alma, Mich., the city in which the new tractor is being made.

The R & P Tractor Co. was recently incorporated for \$500,000 under the laws of the State of Illinois.







A Front and a Rear View of the New R. & P. Tractor, Which Has Just Been Announced

Note the ability of the tractor to conform to uneven ground. The position of the pulley is also plainly shown, as well as the construction of the front axle. In the rear view one is impressed with the simplicity of control and design shown by the clean dash.

### Maxwell Has Three-Plow Farm Tractor

New Machine Has an Adjustable Rear Tread as Feature; Also Inclosed Transmission, Three-Speed Gear Set and Provision for Work on Roads

NEW farm tractor, developed by the Maxwell Motor Co., Detroit, Mich., was announced at a gathering of Maxwell-Chalmers dealers during the Chicago Show week. Moving pictures depicting the machine in various stages of its development and testing, were the medium through which the dealers were made acquainted with the Maxwell tractor. It came as somewhat of a surprise because it was designed and developed and tested through a period of five

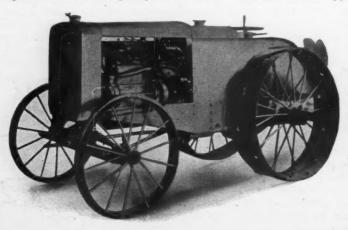
years, under the name "Chief," which concealed its real identity until such time as the company saw fit to reveal it.

The testing of this tractor was carried out chiefly on the large plantations of Louisiana and was supervised by the field engineer of the Maxwell Co.

As is to be expected when a tractor is built by an automobile maker, the Maxwell product follows automobile practice in design and principle. The engine is of the removable L-head type and simple in design. It sets under the hood at the front. A horsepower of 29 is developed. The bore and stroke are 4½ and 6 in., respectively. The engine is governed to run at 900 r.p.m. The normal drawbar pull is 2600 lb., which is variable up to 3000. The tractor is rated as a 3-plow machine capable of doing all farm work, either in the field or on the belt, and is provided with means for doing satisfactory road work.

#### **General Characteristics**

The Maxwell is a 4-wheel type tractor and has an approximate weight of 3600 lb., less fuel and water. The rear drive wheels are 48 in. diam., with 10-in. face. The front wheels are carried on an automobile type axle that is connected to the frame through a transverse spring and a swivel connection. This provides sufficient flexibility to prevent strains and distortion resulting when running over uneven or freshly plowed ground. The wheelbase is 84 in., and the radius of the circle in which the tractor turns is 101/2 ft. All the working parts are enclosed so that protection from dirt and dust, with its consequent wear, is adequately taken care of.



The Carburetor, Magneto and Water-Circulating Pump Are on the Left Side of the Maxwell Tractor.

Observe how easy of access the intake and exhaust manifold are. They are well protected when the hood sides are in place.

The frame is pressed steel consisting of two deep angles with the flanges turned in, which makes practically a U-section. This is similiar to the prevailing frame construction in tractor practice. The engine, the transmission, and all working parts are carried in this U-frame, which is 7 in. deep.

A close view of the main parts of the tractor reveals the fact that there are two principal units, the power plant and the transmission. The former includes the transmission. crankcase and the bell housing, while the latter is a sturdy casting extending from the bell housing to the rear axle and containing the transmission gears. A rigid construction and solid support are obtained by bolting these two component castings together at the bell housing. The three castings that compose the unit power plant are the cylinder block, the removable head, and the oil pan casting. Proper cooling is assured by water jackets of extra large capacity. They extend to the bottom of the cylinder, forming a straight wall on the outside down to the crankcase. The cooling of the cylinder head has also been made positive by ample water spaces which carry the water well around the spark plug seats so that hot points cannot develop.

A cone clutch, 16-in. diam. and 3-in. face, with asbestos fabric lining, is inclosed in the bell housing. On the reverse side of the clutch the service brake is mounted. Three speeds on either drive or pulley gear reductions are provided by the transmission. On high, a speed of 6 m.p.h. is attained.

Flexibility Throughout Spring

Mounting and Three-Point

Suspension

Plowing speed is 2½ m.p.h. and low speed, 1¾ m.p.h., all of which are at 900 r.p.m. of the engine.

Three  $2\frac{1}{2}$ -in. diam. bearings are used on the crankshaft. From front to rear they are  $3\frac{3}{4}$ ,  $3\frac{1}{2}$  and  $4\frac{1}{4}$  in. long. The connecting rod has a bearing  $3\frac{1}{2}$  in. long.

Force-feed and splash is the method of lubricating the working parts. The pumps

through a regular tubular radiator. The make of the magneto is undecided as yet but will have an impulse starter. Both the governor and the fan are driven by gears.

The drive is taken from the clutch to the transverse shaft by bevel gears. A pulley is placed on one end of the transverse shaft, and on the same shaft between the frame and the transmission is a cable hoist.



Two Full Rear Views of Maxwell Tractor. At the Left the Extension Units Are Attached to the Axle, Giving a Wide Track. At the Right the Wheels Are Set Close and Are Equipped With "Municipal" Treads for Roads or City Use

provide positive oiling even when the tractor is tilted in any way. There is a pump at the front end of the crankcase, one at the rear end, and one which takes the oil from the pump and delivers it to the main bearings. It will be recalled that this system of oiling is similar to that used in airplane practice.

Gasoline is fed by gravity from a tank of 26-gal. capacity placed in back of and above the engine. Proper evaporation of the mixture is obtained by using a hot-spot manifold. The capacity of the cooling system is 9 gal. A pump is used to circulate the water

The pulley and the hoist attachments make it a very versatile machine, capable of a great variety of applications.

One unusual and interesting feature is the adjustability of the tread at the rear. The differential is carried on the rear axle, the axle being hollow. It drives, after passing through the differential housing, through tubular units. Additional units can be added at any time to widen the tread and allow the tractor to be adjusted to field rows of varying widths. The drawbar is also adjustable, i. e., the load can be attached at any point.

The Maxwell tractor is to be produced in quantity as soon as possible. In other words, it is on the eve of production, as was announced by the officials at the dinner in Chicago. The rush of Government orders has prevented production until now. The price of this new tractor has not been definitely decided as yet, but the manufacturers state that it will be numbered among those of low price.

#### Selling Against Prejudice

Psychology must play an important role in lining up the farmer as a tractor user. He is different in temperament from the business man of the city and for some reason or other he is often very much prejudiced against the tractor. This is due to a great extent to the faith of the farmer in tried methods and the conservative manner in which he approaches anything radically new. Labor shortage and high prices, however, are making him willing to lend an ear to the possibilities of tractor farming. It is only necessary to intelligently convince him that what he hopes he may realize.

The method followed by one active and progressive tractor manufacturer along the

educational line is of interest to all. In the early part of the year this company launched an intensive campaign with a working sum of from \$25,000 to \$40,000 for one state during the year 1918. One demonstrator is assigned to each county in the State, so that there is a crew of men actively at work throughout the State.

An advance publicity campaign is run in the local papers announcing the time of the demonstration and lecture. Then the demonstrator arrives with moving-picture machines and views of the company's tractor at work under varying conditions. The affair lasts throughout most of the day, during which time no mention is made of selling tractors. The farmer is shown the use of the tractor in both plowing and other farm work. Then there is an open

meeting when the farmer may ask questions and quizz the demonstrator.

When the meeting closes the farmers are invited to register in a record book so that the company can send them other educational literature from the main office. In this way a valuable list of interested farmers is obtained.

Later, the farmer is informed that whenever he wants a practical demonstration all he has to do is to notify the dealer in his nearest town, who gets in touch with the demonstrator for that particular county and in that way no time is lost.

The success of this plan is shown by the fact that over 200 farmers attended a demonstration held at a little town of some 350 population. The idea, at least, deserves commendation and perhaps emulation.

#### Hoosier Wheel Has New Method of Obtaining Traction

HE Hoosier Wheel Co., located at Franklin, Ind., is starting production on a newly designed wheel for tractors. Its most important feature is the way in which effective traction is secured. On many former tractor wheels, where cleats were used, the dirt and mud showed a marked tendency to adhere to the wheel rim so as to destroy the purpose of the cleats or lugs.

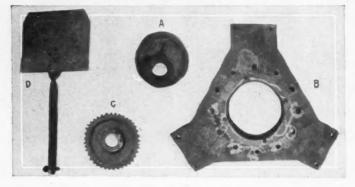
through slots in the rim of the wheel. These spades are of such a length as to stand flush with the rim of the wheel from the flat side of the eccentric. This means that they protrude four inches when the opposite side of the eccentric has moved around. As the wheel rotates, these spades are continuously moved inward and outward with much the same motion as a piston, be-

of the tractor is placed a gear and pinion, the gear being fastened to the axle. This is connected with a hand wheel located in

# ing actuated by the eccentric on the axle. Where the axle is fastened to the frame

#### Parts of Hoosier Wheel

A: Eccentric that is rigidly fastened to the axle. B: Collar, which rotates around eccentric and to which the spadelike lugs are attached. C: The worm and pinion by which the wheel is adjusted for road or field work. D: One of the spade lugs.



This caused excessive slippage and loss of

The new Hoosier wheel, however, incorporates a design that precludes the possibility of any damp earth or mud sticking to the face of the wheel and destroying proper traction. The construction also allows the wheel to be used for road work without removing any parts, the only thing necessary being a simple adjustment.

The axle on which this wheel rolls is fastened to the frame of the tractor in such a way as to allow its being turned in a rotary direction. On this axle an eccentric A (see illustration) is keyed so that when the wheel is in motion the eccentric follows This eccentric is between the outer and inner wheel bearings. Around it is

mains fixed until changed. The collar which fits around the eccentric is made dirt-tight and has a suitable oiling device. Another feature of the Hoosier wheel is that it is self-cleaning. It is evident from the movement of the spades that with each revolution of the wheel each spade is cleaned of dirt and mud in moving through the slot in the rim. This action is constant and automatic so that the traction of the wheel is not affected by mud and earth.

position convenient to the driver. Through the hand wheel the operator can turn the axle in a rotary direction. This

changes the position of the wheel at which

the spade reaches its maximum protrusion

and it can be regulated to be either at the

top or bottom of the wheel, depending on

whether it is being used in the field or for

road work. The worm and pinion also serve to hold the eccentric in whatever po-

sition it is set so that the adjustment re-

The Hoosier wheel has been under development for three years and all arrangements have been made for rapid production.



Complete Tractor Hoosier Wheel With Spade-Lugs Adjusted for Road Work

placed the collar B which fits the circumference of the eccentric and moves around it. To this collar are hinged a number of spade-like attachments C which extend outward from the center and protrude

#### Inaugurates New Dauch Tractor-Selling Plan

The Dauch Mfg. Co., of Sandusky, Ohio, has recently put into effect a new sales room and service station plan.

This plan provides for the purchase by the dealer of from one to five machines as a starter, in fact, no dealer can sign a contract until he purchases at least one sample machine. This contract also provides for the establishment of a service station for tractors along the lines of a local automobile garage.

This company is picking its men as it goes along, making certain that each and every one possesses the qualities which will turn him into a live, business-getting Sandusky dealer, not only for the season of 1918, but for years to come.

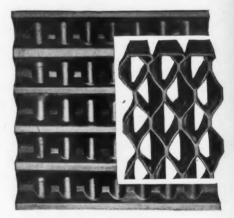
#### Spery Combination Radiator Adapted to Tractors

The big feature in the construction of the Spery radiator is that it combines the principle of both the tubular and honeycomb type without the faults of either. This is accomplished by pressing the tubes into the water wall. A front view, therefore, looks the same as the usual honeycomb radiator. A cross sectional view discloses the large zigzag canals through which the water circulates in much the same manner as in the honeycomb design, but, according to the maker, affording more points of heat transit.

The numerous vertical tubes that are pressed into the water walls are shown in a top view of the radiator core.

Because of its combination features the Spery radiator is said to freeze only in extreme low temperatures, thus overcoming one disadvantage of the tubular type, and it is also claimed that this radiator will not clog up-as sometimes occurs in the honeycomb radiators.

Pressing the tubes into the water walls. combined with the bridge-like construction



Spery Radiator Especially Suited to **Tractor Service** 

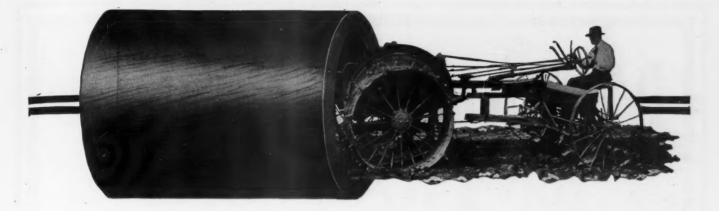
Above are the tubes of this radiator, pressed into the water - jacket walls, and also a front section showing the zigzag water spaces.

of these walls, gives added strength and makes the Spery radiator strong and rigid enough for use in any kind of work, especially where hard, gruelling service is required such as tractor service in the fields.

Wide surface for soldering lessens the danger of leakage. Simple construction facilitates repairs which can be made at little expense. Light weight is also a feature so that the Spery radiator combines those two desirable features, strength and lightness.

The manufacturer, the Hooven Radiator Co., 417 S. Dearborn St., Chicago, Ill., offers to send a sample radiator to any tractor maker for testing by engineers so that the qualities claimed of it may be proven.

The Brewer-Mosel Auto Co., Madison, Wis., has taken over the nationwide distribution of the Wisconsin tractor, made by the Wisconsin Tractor Mfg. Co., Sauk City, Wis. This contract represents about \$1,800,000 worth of tractors for each year.



# Safeguarding the Tractor



The bearings and bushings of a Farm Tractor must be lubricated—efficiently lubricated—or it will quit work and break down.

Many of its bushings are so located as to be difficult or impossible for the farmer to lubricate, even if he had the time or inclination to do so.

Therefore the leading builders of Farm Tractors use genuine graphited oil-less bushings in those bearing places most liable to neglect. In this way they safeguard and prolong the service life of their product.

Genuine graphited oil-less bushings are "oiled for life" when made, and though oiling will not hurt them, still they will run efficiently without oiling or attention of any kind,

They are insurance against quick wear and early break-down. They are neglect-proof. In

many instances they have run for months in mud, water, dust and chemicals without deterioration. They absorb dust and grit without harm to themselves, thus giving additional protection to the shafting. They are light in weight, and run smoothly, silently and efficiently.

Genuine graphited oil-less bushings are used by the leading manufacturers of motor cars, motor trucks, gas engines, windmills, elevators, escalators, tractors and mining machinery, and are endorsed and used by the U. S. and foreign governments in battleships, aeroplanes and submarines.

Manufacturers: Write for test bushings and literature or have us refer you to other manufacturers in your line, who use these bushings. There are two different kinds of oil-less bushings to select from: Impregnated Iron Wood, called "Nigrum" (Trade Mark Reg. U. S. Pat. Off.), or Graphite and Bronze, called "Bound Brook" (Trade Mark Reg. U. S. Pat. Off.).

All Genuine Graphited Oil-less Bushings have always been made at Bound Brook, U. S. A.

#### BOUND BROOK OIL-LESS BEARING CO.

Specialists in the manufacture of Oil-less Bushings for over a Third of a Century

**Bound Brook** 

New Jersey



The Moline Universal Tractor is safeguarded against neglect and quick wear by "Nigrum" Impregnated Wood Oil-less Bushings

When Writing, Please Say-"Saw Your Ad. in the CCJ"

# METAL STAMPINGS for TRACTORS

# Appearance Helps Sell Tractors

FFICIENCY is the aim of every tractor maker, but it doesn't necessarily produce sales. Your tractors may be just as capable as some other manufacturer's, yet he will sell more, because their better looks make them seem a greater value. Increase the salability of your product by giving them the better and neater appearance that York Metal Stampings promote.

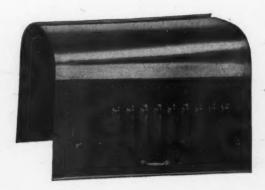
Motor car and truck dealers are the logical distributers of tractors. That means your tractors will be put on show beside trim-looking automobiles and commercial cars. If no attention has been paid to appearance—they are going to suffer in sales by comparison. Farmers, realizing that practically all tractors are good performers, will buy the ones that look the best, because greater value is suggested.

Make yours attractive, it will help sell them. Spend a few dollars extra, about ten dollars a tractor, and it will come back to you in increased business.

Write us at once and get our prices on Hoods, Fenders, Tanks, etc. Our quotations, the quality of the Stampings, and the deliveries will meet with your approval.







York Corrugating Co., York, Pa.



When Writing, Please Say-"Saw Your Ad. in the CCJ"

# For TRACTOR SERVICE

# G & O Radiators

fill the demand for an enginecooling unit of proven reliability; the result of correct design, painstaking attention to the details of manufacture, and the use of the very best materials.

Our Engineering Department is at your service

The G & O Mfg. Co.

New Haven

Conn., U.S.A.





# HURLBURT



A RECORD OF PROGRESS



The history of the Hurlburt is a record of progress. It is a story of high ideals; of a new conception of truck building; of prolonged study, travel, research and investigation; of the creation of a far-advanced type of truck; of a prolonged period of watching, studying, testing and improving; of an amazingly good truck that set new standards of efficiency; of a substantial growth due entirely to quality, value and service, and of a triumphant conquering of the world's hardest market. It is an intensely interesting story, which shows how inherent worth cannot be downed, but forces its way through obstacles and skepticism to the dominating position at the top—but it cannot be told here.

There are, however, a few important features in this array of facts which compel attention.

First of all, bear this in mind: The Hurlburt is not a hastily designed and assembled truck, but one that is the fruition of the most careful thought, study and investigation that have ever been responsible for the creation of a truck. It embodied advanced ideas which time proved to be right, and created new

constructional standards which placed truck making upon a higher plane in which cost became secondary to quality.

The second significant fact is this: After the Hurlburt was built it was not offered for sale until the most severe tests that could be devised proved it was superior to any truck then on the market.

The third outstanding fact is: Its growth has been steady, consistent and continually increasing. Its present position has been attained without the aid of spectacular methods, but by merit of performance alone. The first year's production was only 26 trucks, but each of them was watched as carefully as an heir to a throne. And each proved itself so superior to the trucks with which it had to compete that it became a missionary of Hurlburt efficiency that created Hurlburt converts wherever it went. It was this, and not price or sensationalism or dickering, that made Hurlburt sales grow by leaps and bounds.

The fourth important fact is: The Hurlburt today dominates the New York market. It is bought and bought repeatedly by many of the largest and most



critical firms in New York, who frankly state that the Hurlburt surpasses any truck they ever operated.

At the very start we determined that the Hurlburt must conquer New York (admittedly the hardest truck market in the world) before it was offered elsewhere. And it has done it in the most glorious manner. Today there is but one make of truck that is more numerous in New York than the Hurlburt, and the makers of that truck were in the field many years before us and have had a large selling force at work while we were carefully building the foundation of our business in a small but thorough way. But now we are rapidly overhauling that make in quantity sold, and stand absolutely unchallenged in achievement. We truly dominate the New York market, and for confirmation of that fact we invite you to "consult users." Their verdict will satisfy us.

Quality alone could place the Hurlburt where it is today. And quality has ever

been the watchword of the Hurlburt factory. We were not satisfied to accept others' standards, we created new and higher ones. Virtually everything that goes into the Hurlburt is a highly specialized, individual proposition, either made in our own factory or made following our individual design and built according to our instruction.

For instance: We pay twice as much for our springs as do most other good makers; we use springs and frames in our  $3\frac{1}{2}$  ton model that are comparable with those usually found in 5 ton jobs (other models in proportion); we build our own rear axles and get an unparalleled efficiency; our radiators are built according to our special designs and are extra strong and efficient. And thus we might go over the whole truck, showing how Hurlburt individuality is built into every part, with the result of producing a truck that stands alone in its ability to serve long, faithfully and economically; a truck that has power and speed in abundance, that never falters, that knows no troubles and that creates that abiding satisfaction that produces repeat orders.



They recently ordered 15 more trucks

For over six years we refused to establish agencies outside of New York, though frequently importuned to do so by dealers who saw and heard of the Hurlburt's remarkable performance. We were determined the New York market must first be conquered, because none other presented such difficulties to the introduction of a new truck.

Now having conquered that market, established our dominance and created a prestige that make sales easy anywhere, we are prepared to expand.

Our factory has been enlarged so that our production can be tripled and our organization has been geared up to handle a large volume of business.

We offer dealers the best truck in America in a range of sizes that meet all requirements. It is a truck that has brought repeat orders from such critical buyers as John Wanamaker; Standard Oil Company; Hecker, Jones & Jewell; Tiffany

Studios; Acker, Merrall & Condit Company; Kranich & Bach; Jacob Doll & Sons; Borden's Condensed Milk Company; Adams Express Company, and Federal Sugar Refining Company. It is a truck you can sell to any firm seeking quality, and in competition with any make.

The merit of the truck is backed up by its great prestige, and a big advertising campaign in mediums such as the Saturday Evening Post and the Literary Digest, and by large advertisements in the leading papers of the cities in which we desire to establish agencies. The dealer is given a generous discount and many sales helps.

A good truck and a good man get business. We have the truck—we want the good man. We are particular about the type of man who represents us—he must grade up to the proposition we offer. If you want to handle the best truck in your territory and feel qualified to make it the best seller, write for the Hurlburt proposition.

Our De Luxe Catalog on Request

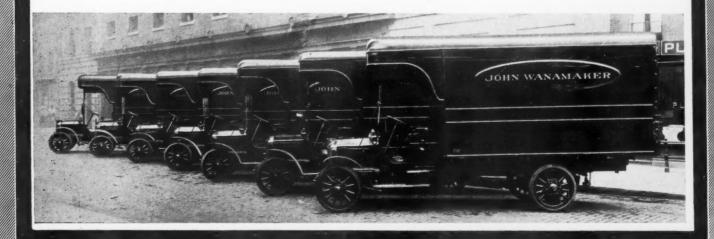
11/2, 2, 31/2, 5 and 7 Ton Models

## **HURLBURT MOTOR TRUCK COMPANY**

Third Avenue and Harlem River

\*\*

New York







# HessBright Ball Bearings



## Motor Truck Quality

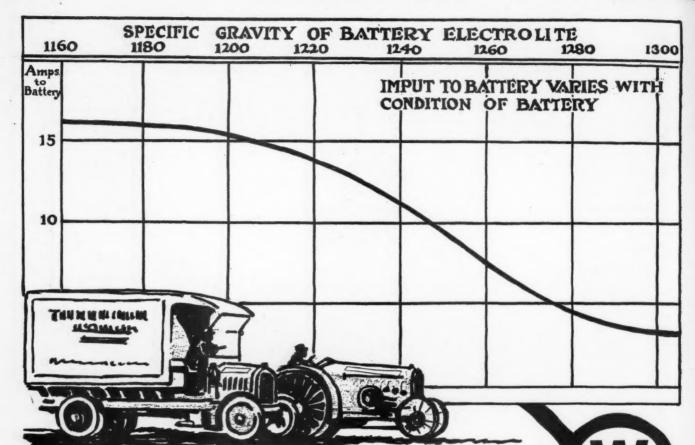
Never before has there been such a need of motor trucks for quick and economical transportation. The demand is for trucks capable of enduring strenuous and uninterrupted service with a minimum of attention or repairs. Trucks with Hess-Bright Ball Bearings, at

all important points, are invariably those of superior quality. You could hardly desire better assurance of careful construction than to have Hess-Bright Ball Bearings in your trucks. They forecast economical and enduring service with quiet, smooth, efficient operation.

THE HESS-BRIGHT MANUFACTURING COMPANY

Where Performance takes Preference over Price

When Writing, Please Say-"Saw Your Ad. in the CCJ"



## For Trucks and Tractors

When the charging current depends only on the charge in the battery, and is independent of the speed of the car or the generator, the battery lasts longer, and the whole electrical equipment gives better satisfaction.

## The Westinghouse Regulator Generator

accomplishes this result, as the performance curve above demonstrates.

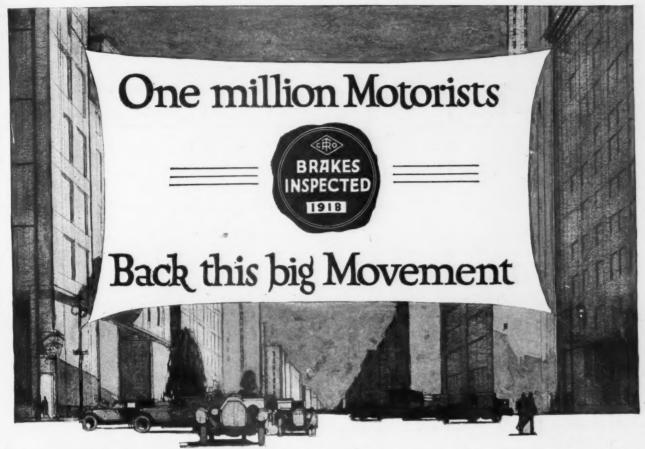
It has other features, too, that will interest not only makers of trucks and tractors, but manufacturers of high-class passenger cars.

#### Westinghouse Electric & Manufacturing Co.

Automobile Equipment Department Newark Works, Newark, N. J.

Cleveland, O. 2025 Euclid Av. Detroit, Mich. Indianapolis, Ind.
Kresge Bldg. Merchants' Mutual Bank Bldg.
New York City
110 to 114 West 43rd St.

# Westinghouse a IGNITION EQUIPMENT



THE new Brake Inspection Movement has obtained the unqualified endorsement of motorists all over the country. Police Commissioners, Presidents of automobile clubs and other prominent officials and motorists have assisted in giving the movement the most widespread publicity.

The car owners in your vicinity are interested in this new movement for the periodical inspection of brakes on motor vehicles, because it means greater safety to themselves and to their cars. This interest can be turned into profit for you. Tie up your business with this movement. It offers a wonderful opportunity for you to obtain general overhauling jobs before the touring season opens. Don't let a motorist go past your window without reminding him of it, at least by a sign.

#### Scientific tests prove Thermoid superiority

When your customers come in for brake lining give them the best. Thermoid Brake Lining is superior to any other brake lining on the market for three reasons.

#### More material, greater service

There is 40% more material and 60% more labor used in the manufacture of Thermoid Hydraulic Compressed Brake Lining than in any woven brake lining. This abundance of material and labor means longer wear.

#### Grapnalized

2. Thermoid Hydraulic Compressed Brake Lining is Grapnalized, an exclusive process which re-

sists moisture, oil and gasoline. Moisture causes brake lining to swell, making it grab or slip.

#### Hydraulic compressed, uniform throughout

Every square inch of Thermoid is hydraulic compressed at a pressure of 2000 pounds. Thermoid is uniform all the way through. It cannot compress in service. There are no soft spots to wear out quickly. It will give uniform service until worn cardboard-thin.

#### Endorsed by automobile

The engineers of fity-one leading car manufacturers, ten of the most prominent axle-makers, all leading jobbers and thousands of dealers have selected Thermoid Brake Lining because of its dependability.

We are co-operating with jobbers and dealers to make this season the biggest ever, not only in Thermoid Brake Lining, but in all branches of their business.

#### Advertising campaign in your city

Our new book, "The Brake Inspection Movement and What it Means to Dealers," tells in detail how we have planned to advertise your store direct to the ear owners of your city, over your name. It is jammed with interesting and prontable ideas for increasing your business.

If you have not received your copy of this book write for it today.

Our guarantee: Thermoid will make good or-WE WILL

#### Thermoid Rubber Company

Factory and Main Offices: Trenton, N. J.

Branches:
New York Chicago San Francisco Indianapolis
Detroit Los Angeles Philadelphia
Pittsburgh Boston London Paris Turin

Canadian Distributors: The Canadian Fairbanks-Morse Company, Limited
Montreal

Branches in all principal Canadian cities

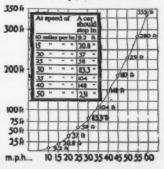
# Will your car do this?

Automobile engineers have proved that when brake mechanism is right and road conditions average, any car should stop at distances and speeds given by the chart.

V<sup>2</sup> means the square of the velocity or speed of your car. 10.8 is the proved factor of retardation under average road conditions. This factor decreases on smooth, slippery roads to 6.7 and increases as high as 17.4 on rough, worn roads. The chart represents the average condition, and other conditions can readily be figured by changing the factor within the given limits.

Remember that your brake mechanism is not "right" unless its brake lining has the ideal co-efficient of friction. The better the brake lining the quicker your stop.

### Thermoid Brake Inspection Chart



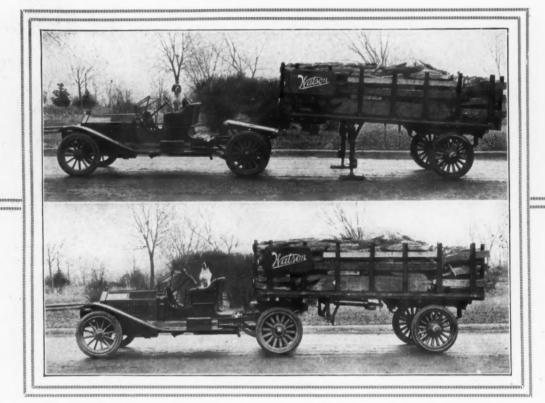






@ Thermoid Rubber Co., 1918

Makers of "Thermoid Crelide Compound Casings" and "Thermoid Garden Hose"



# Big Market for Used Cars

Convert them into tractors! Many are the business men with used cars to "trade in" who could be influenced to turn them into tractors and use them—and then buy new pleasure cars at full prices.

With a good tractor unit and

## WATSON UNIVERSAL TRAILERS

of the semi-type, you can solve your used-car problem with an unexpected profit, instead of loss. The principle of the drawing of loads instead of carrying, gives a pleasure car 4 times the capacity of an equally

powered truck.

And Watson Trailers—as Watson Wagons always have been—are the standard of trailer values. For use with any tractor, tractor unit and motor truck!

Write for Agency particulars.



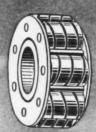
WATSON WAGON CO. 46 W. Center Street CANASTOTA, NEW YORK







Timken Roller Bearing



Roller Bearing



New Departure Ball Bearing

# Bearings Service— "Just Around the Corner"

You now find a Bearings Service Branch, or one of its authorized agents, in over 275 of the most important automobile centers of Americavirtually "just around the corner."

-And this remarkable growth from an organization of only nine direct branches 17 months ago. Before many more months pass it will be represented in over 500 cities—conclusive evidence that the American Motorist appreciates the unusual reliability of the service rendered.

The Bearings Service Company is the official national representative for the manufacturers of Timken, Hyatt and New Departure bearings. Complete stocks of all bearings are kept in each one of the twenty-two direct branches.

Authentic engineering data and records furnished direct by the manufacturers enable each branch to supply for repair or replacement the correct bearing part for any make of motor car, motor truck or tractor in which these bearings were ever installed.

Branches In All Principal Cities

San Francisco Kansas City Indianapolis Om Los Angeles Dallas Rochester Pit Atlanta Cleveland Philadelphia Por Seattle Denver St. Louis Minneapolis New Orleans

BEARINGS SERVICE COMPANY

General Offices-Detroit, Michigan









The Fidelity, Storage, Packing & Moving Co. of St. Louis, Mo.

decided to use trucks. They were conservative having used horses for thirty-eight years.

Various trucks were offered them-they made a Strict and Careful Comparison and Selected -

**GRAMM-BERNSTEINS** 

NOTE THEIR SATISFACTION

**GRAMM-BERNSTEIN** MOTOR TRUCKS through their actual performance in over onehundred different lines of business - are proving a lower operating and maintainence cost than any other truck - Interesting data on our trucks for every purpose sent on request.

C. F. BETTS, PRESE

Fidelity Storage, Packing and Moving Co.

MOTH-PROOF LINED AND CEDAR ROOMS

Moving Done with Care is an energy of the City, Guntly and East St. Louise 1721-1723-1725-1727-1729 MORGAN TRANSPOOR SELL, MAIN 1176 KINGGER, CENTRAL 621



"The Best is the Cheapest"

Gramm-Bernstein Motor Truck Company

Centlemen- In looking over our files, I find à memorandum, made June 29th 1916, the day we purchased from you our Z.1/e Ton, Gramm-Bernstein Motor frunk, promised to write you one year hence whether or not the Truck had fulfilled every representation and promise made that day. Wearly Two years have elapsed and I frankly tell you, the truck is --running as handsomely as the day you demonstrated, doing the

Notwithstanding the fact it has been in constant service ever since, it has never failed to give eminent matiefaction. For Durability, reliability, Economy and Service, we heartfly recommend the Granm-Bernstein Motor Truck.

Wishing you's prosperous new Year, we are Respectfully

USED EXCLUSIVELY BY MANY FOREIGN GOVERNMENTS

The GRAMM-BERNSTEIN MOTOR TRUCK CO. 15 Gramm Blvd., LIMA, OHIO

When Writing, Please Say-"Saw Your Ad. in the CCJ"

# THE STORY OF HICKORY

# Why Schwarz Wheels Are Made of Hickory

From Tree to Wheel





Schwarz Wheels are made of hickory because experience, laboratory and service tests and governmental and private research work have all conclusively established the superiority of hickory for this purpose.

The Schwarz reputation is so high that we dare not use anything but the best hickory for spokes; for the best materials, the best method of construction, and the best workmanship are all essential to maintain our proud position of producing the standard wheels of the industry.

Hickory makes the best wheels, because it possesses certain essential qualities in stronger combination than can be found in any other material. These qualities are toughness, strength, elasticity and ability to resist and absorb shocks—all very important in wheel making.

The bulletins of the U. S. Forest Bureau declare that hickory is superior in toughness and strength to any other commercial wood, that for a number of important uses, such as making spokes, no satisfactory substitute is known, and that no timber has ever been found which has both the strength and shock-resisting qualities of hickory.

Hickory is not only strong and durable, but is also light. It is this desirable combination which made American carriages and buggies famous throughout the world, and made hickory the favorite wood for many special uses in which this combination of qualities was needed. It is particularly desirable for spokes.

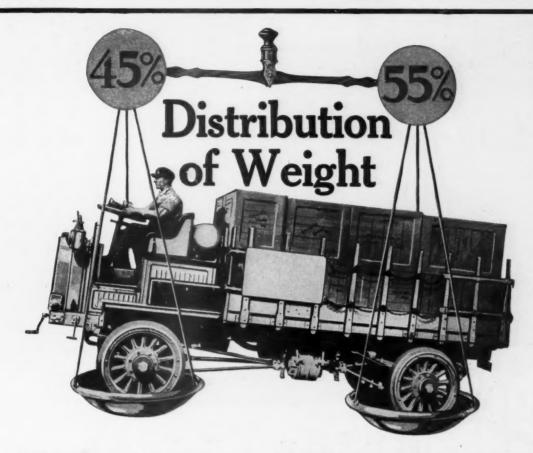
Elasticity is another highly-prized quality of hickory. It is for this reason the Indians used it for their bows and hickory withes and the bark for ropes and cords. Elasticity is essential to good wheels.

The ability to absorb shock is another strong point in favor of hickory. Trucks receive hard usage and continually experience road shocks. It's much better to have wheels that will absorb part of these shocks, and thus save the truck and its load, than it is to have wheels that pass on the shocks with added vibration, as is the case with metal wheels.

In short, we use hickory in Schwarz Wheels, because we believe it is the best material for the purpose, and will give the greatest service and satisfaction.

This is the first of a series of advertisements which will deal with the story of hickory in its various phases. They are designed to show why hickory is used and why it is best to use SCHWARZ WHEELS. The second of these advertisements will appear in the next issue of this publication.





THE principle of the four wheel drive as applied in F-W-D Trucks adds greatly to the dependability of the truck. With power in both axles the load may be brought forward and the weight distributed as in

# FWD TRUCKS

45 percent of the weight is carried on the front axle and 55 percent on the rear. On other types of trucks 75 to 95 percent of the load is on the rear axle. This is necessary to provide traction sufficient to drive the truck.

Even distribution of weight permits of shorter wheelbase, which means easier handling in traffic. It also equalizes the strains, adding to the life of the truck. It equalizes the wear on tires and saves them to such an extent that tire manufacturers give the same guarantee on single rear tires for F-W-D Trucks that they give on double tires for rear drive of the same capacity.

The new illustrated catalog describes exclusive construction of F-W-DTrucks and how it produces dependability and economy in operation—write for it.

#### FOUR WHEEL DRIVE AUTO COMPANY

Department E

Clintonville, Wisconsin



### With the Call "To Arms" Comes the Call for More Ships! More Trains! More SUPERIORS!

\*\*FFICIENT transportation is vital and necessary to strengthen the nation's sinews for carrying on the war. The call "To Arms" is supplemented by the calls for more ships, increased railway facilities and more SUPERIORS.

The public highways are taking their place in our great system of transportation. Motor trucks are busily and effectively relieving overcrowded and congested railroads. But it takes stamina, super-strength and great endurance in a motor truck to measure up to the demands of war service. Superior trucks meet the requirements and are doing their share of the strenuous war work. The way repeat and fleet orders are coming in from Superior dealers all over the country speaks volumes for Superior performance.

Perhaps we are not represented in your territory. If we are not—here is your golden opportunity. The Superior agency is a valuable asset. Two husky models—Model A, 1 Ton and Model C, 2 Tons—promote a big business. Look over the brief specifications below, and there you will see what makes them so capable. The incorporation of the best units made, plus many exclusive features in construction assure unyielding efficiency and your success as a dealer.

Write today and get complete details of our agency proposition. It is one of the most liberal and co-operative ever offered.

#### - BRIEF SPECIFICATIONS

Motor-4-Cylinder, mono-bloc, valve-in-head.

Governor—Monarch. Carburetor—Stromberg.

Carburetor—Stromberg.
Cooling—Thermo-syphon, Zig-Zag Radiator.
Clutch—Multiple-disc, dry-plate, Raybestos on steel.
Transmission—Fuller.
Rear Axle—Torbensen Internal Gear.
Frame—Pressed-steel channel.

Model A-1-Ton, \$1500

Front Axle—I-beam, nickel-steel spindles, Bower Roller Bearings.

Springs—Heat-treated alloy steel.

Wheels—Schwarz.
Gasoline Tank—Vacuum feed, 15 gallons.

Standard Equipment—Driver's seat, cab top, cushion, front fenders, side and back oil lamps, running-boards, Long Horn, jack, set tools.

Model C-2-Tons, \$2000

**Superior Motor Truck Company** 

Atlanta, Ga.



## Republic Truck Tires For Hard Work

Republic Truck Tires show their stamina where the work is hard.

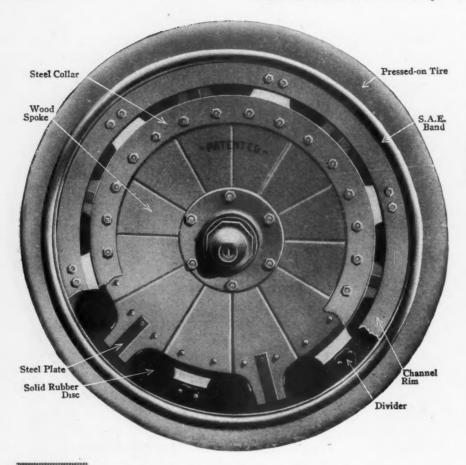
The built-in quality shows when the usage is unusually severe.

Many fire departments are equipping with Republic Truck Tires, because they do last longer.

Republic Truck Tires are made by the Prodium Process which makes the rubber particularly tough and wear-resisting.

The Republic Rubber Corporation
Youngstown, Ohio

# REPUBLIC TRUCK TIRES



# Sendelbach Resilient Wheels





#### "The Life of a Truck"

When Sendelbach Resilient Wheels strike ruts, cobblestones, rough crossings or obstructions daily encountered by motor truck wheels, the force of impact is positively absorbed. The discs of solid rubber eliminate road shocks and driving shocks by instantaneous compression.

Sendelbach Resilient Wheels thus protect the mechanical parts of motor trucks from destructive shocks, thereby insuring decreased cost of upkeep and increased earning power.

#### "Resiliency is the Keynote"

Note the action of the solid rubber discs, shown in the diagrams to the right. This maximum resiliency protects against shattering shocks, and also increases the mileage of pressed-on tires.

Violent "skidding" or strain caused by pulling in and out of car tracks or ruts, cannot throw Sendelbach Resilient Wheels out of perfect vertical alignment.

Sendelbach Resilient Wheels are the logical equipment for motor trucks.

Write for Circular and Price List

# **RECH-MARBAKER COMPANY**

Sole Manufacturers

8th Street and Girard Avenue

**PHILADELPHIA** 



# Nash Trucks Release Freight Cars

American supplies will win the war.

With this truth apparent our government is straining every effort to speed up the transportation of food, army equipment and munitions to France.

From North, South and West, through the steel arteries of America's great railway systems, government war supplies are being rushed to the Eastern Seaboard.

The government has need for every available freight car.

"Use motor trucks for short hauls, is the word from Washington.

That business houses are heeding that call is evidenced by the ever increasing demand for Nash Trucks.

The complete line of Nash Trucks meets the present situation squarely. It comprises two rear drive units, Nash One-Ton and Nash Two-Ton, and the famous Nash Quad, all built by Nash experts in Nash shops.

In the hands of users the Nash One-Ton and Two-Ton Trucks have proved their ability to stand up under hardest service.

The famous Nash Quad, which drives, brakes and steers on all four wheels, has a reputation that is worldwide.

At your request we will show you just how completely Nash Trucks will solve the present-day hauling problems.

## The Nash Motors Company Kenosha, Wis.

Manufacturers of passenger cars and trucks including the famous NASH QUAD

#### Nash Trucks

Nash One-Ton Truck, chassis - - - \$1495 Nash Two-Ton Truck, chassis - - 1875 Nash Quad, chassis - - - - 3250

Prices f. o. b. Kenosha

# NASHMOTORS

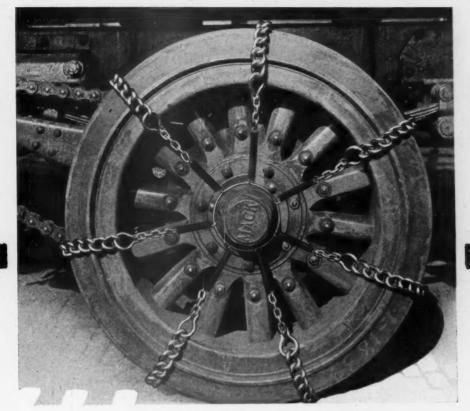
VALUE CARS AT VOLUME PRICES

When Writing, Please Say-"Saw Your Ad. in the CCJ"



When Writing, Please Say-"Saw Your Ad. in the CCJ"







# These Chains Save Both Truck and Tires

Good chains have become a necessary part of every truck's equipment. It is neither wise nor safe to send a truck out on the street or road where it will encounter ice, snow, mud, steep grades or other difficult traffic conditions without having the means of giving it the needed traction in every emergency.

Trucks equipped with Trax-Yun Chains are ready for any emergency and are assured of getting traction under any and all conditions. Trax-Yun Chains make the truck safe.

There are plenty of chains on the market, but the Trax-Yun surpasses them all as an efficient anti-skid device, because the Trax-Yun principle of construction is scientifically correct.

Look at the illustration and see what we mean. There is a center-ring fitting around the hub, to which is attached seven springs. Seven chains are thrown around the tire. At one end of each is a triangle grab-link. At the other end is a series of small, straight links. In between are twisted links which lie flat on the tire. The chains are drawn tight around the tire, and the small links run through the grab-link and fastened to the end of the spring. These springs give equal tension and allow the chains sufficient play so they slide along the tire and do not gouge it in case of a sudden stop. Thus they save the tires, as well as give efficient traction.

There is now, and always will be, a big demand for Trax-Yun Chains. That demand comes from those who have tried and compared Trax-Yun Chains with others, and know what they do. You can increase it enormously by showing your truck-owning trade how they give traction under the most adverse circumstances and thus increase truck efficiency.

Our trade discounts will make it a profitable proposition for you.

Truck Chain Mfg. Co. Station F · Cleveland, Ohio

TRAX-YUN CHAINS



# Solving The Haulage Problem

CLEVELAND telephoned Cincinnati for supplies—A big contract depended upon quick shipments.

There wasn't a freight car to be had for love or money.

But that did not bother Cincinnati. The telephone message came at eight-thirty in the morning.

At ten-thirty a big three-ton truck was on its way north loaded to capacity—

Shortly after noon the next day it was unloading at its Cleveland destination.

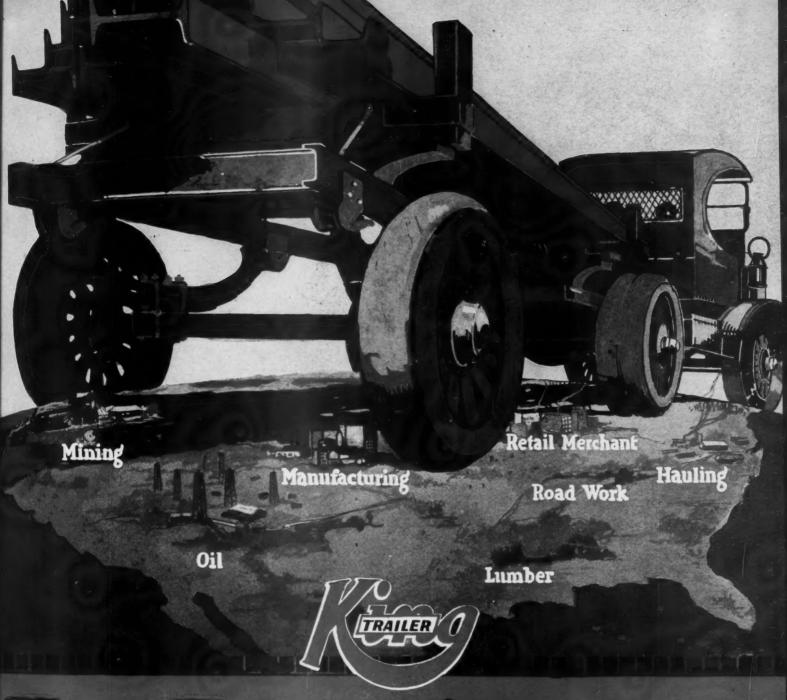
The saving in time alone was worth more than the entire cost of the truck.

Under existing conditions the motor truck is an economic necessity.

The railroads must be relieved—commerce and industry must depend upon the motor truck for short hauls, and frequently even for comparatively long hauls.

Wilson transportation engineers will help you to adapt Wilson Trucks to your haulage requirements.

Wilson Trucks are the product of more than thirty-five years' experience in the building of heavy-duty transportation vehicles. One-, two-, three-and-one-half, and five-ton worm-drive models.



# King Trailer Advertising Reaches Every Business

The farmer—the merchant—the manufacturer—the lumber operator—everyone who has anything to haul is being reached by this big campaign.

The King Trailer line offers a carrying unit for every imaginable hauling use. King Small Trailers for the farmer and the retail merchant—King Semi-Trailers for the manufacturer, the road builder or the mining company—King Pole Trailers for the timber, public service work and the oil fields. The most complete line of trailers on the market today.

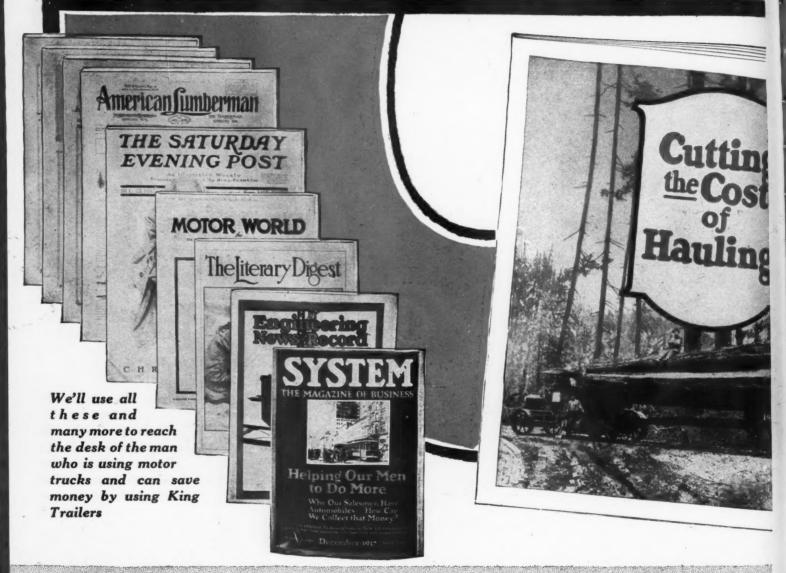
Prompt delivery is assured. Write or wire

#### KING TRAILER COMPANY

702 Main Street

ANN ARBOR, MICHIGAN

Sell Kins



These Will

WRITE OR WIRE FOR DEALER OPTION

# Trailers



Every business man will be appealed to in this big advertising campaign which we are running to help you sell King Trailers. We'll follow up their inquiries with specially prepared bulletins printed in two colors and planned to convince each classification with dollars and cents arguments of the necessity of using King Trailers. Then it's up to you to close, and we're pretty confident you can do that.

I Help Wow

King Trailer Co., 702 Main St., Ann Arbor, Mich.



# Your Prospects Are Listed Here This Campaign Will Reach Them

Contractors and County Commissioners

The Road-Maker

**Engineers and Contractors** 

Engineering News-Record Engineering & Cement World

Building Supply Dealers

American Builder

Furniture Dealers Grand Rapids Furniture Record

State Highway Commissioners

Engineering News-Record

Implement Dealers

Farm Implement News Farm Machinery-Farm Power Implement Age Implement & Tractor Trade Journal Implement-Hardware Bulletin

Motor Truck Users

Automobile Trade Journal Commercial Car Journal Commercial Vehicle Motor World Motor Truck Power Wagon

Lumbermen

American Lumberman American Builder

**Telephone Companies** Telephony Magazine

Transfer and Storage

Companies

Transfer and Storage

Mining Companies Mining & Scientific Press

The Oil Field Oil and Gas Journal

And we will reach big business men in every industrial activity through the Saturday Evening Post, System and Literary Digest.

This advertising is intensified, concentrated to hit home with selling arguments that talk the language of the reader. Live Dealers, Note!! We're covering the country for you to help you sell King Trailers. If you want to make money, write. Valuable territory still open.

King Trailer Company

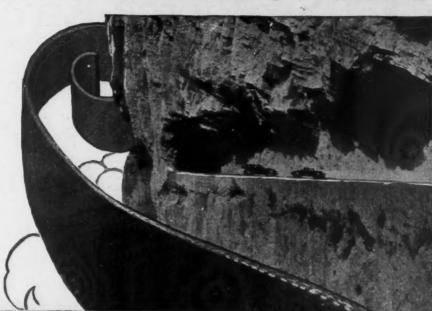
702 Main Street

Ann Arbor, Michigan



# Johns-Manville

THE one thing in brake lining that counts most for dependability and long life is the quality of the asbestos that goes into it. That is why Non-Burn has the advantage over other brake linings in being made by the world's greatest manufacturers of asbestos products.



# NON-BURN ASBESTOS BRAKE LINING

LONG before the day of the motor car, Johns-Manville engineers had learned how to make dependable brake lining for giant industrial machinery. And so the tremendous and sudden demand for automobile brake lining found them years ahead of competition, both in command of the best raw material and in knowledge and experience in the process of manufacture.

The strong, tough fibres of Asbestos that are woven with wire into Non-BurnBrake Lining come from Johns-Manville's own mines and represent the highest grade of asbestos mined anywhere in the world.

To the Trade—Non-Burn is distributed strictly through jobber-dealer channels with liberal discounts, uniform and rigidly maintained. Details of this protective trade policy sent on request.

H. W. JOHNS-MANVILLE CO. NEW YORK CITY 10 Factories—Branches in 61 Large Cities

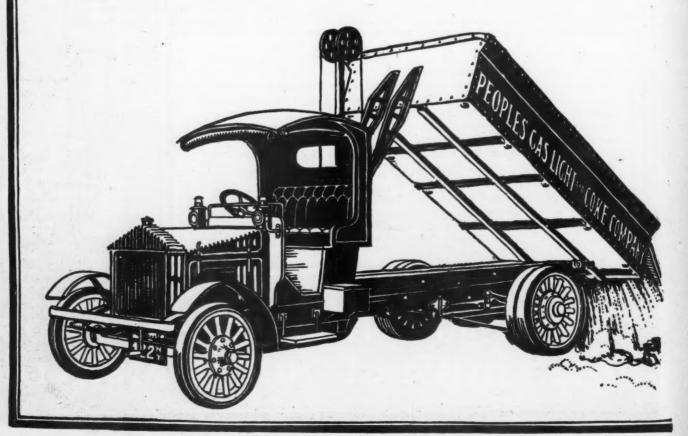


When you think of Asbestos you think of Johns-Manville

# Six Pierce-Arrow Trucks Replace All Horses in Service of The Peoples Gas Light and Coke Company

SIX 5-ton Pierce-Arrow trucks have taken over the entire haulage service of the Peoples Gas Light and Coke Company of Chicago. The work was formerly all done by teams, but the Pierce-Arrow trucks have proved so satisfactory that the last of the horses have now been retired.

The trucks are used in a wide variety of service. The hauling and installation of pipe is the most important. They also haul paving stones and other similar materials. One truck is devoted entirely to the delivery of gas ranges to consumers.

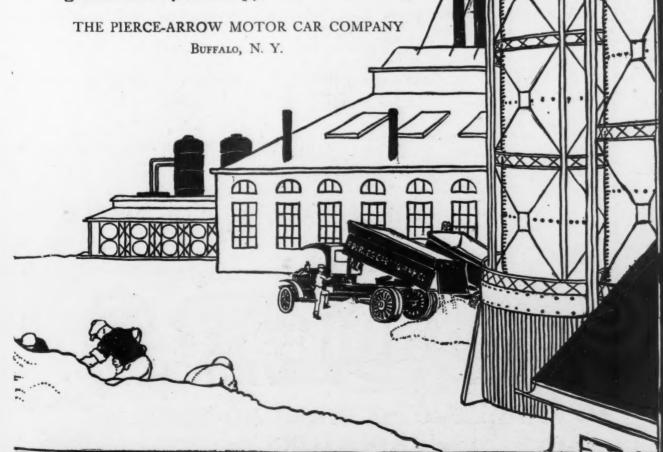


The Worm-Gear All Pierce-Arrow trucks are equipped with the worm-gear drive, which

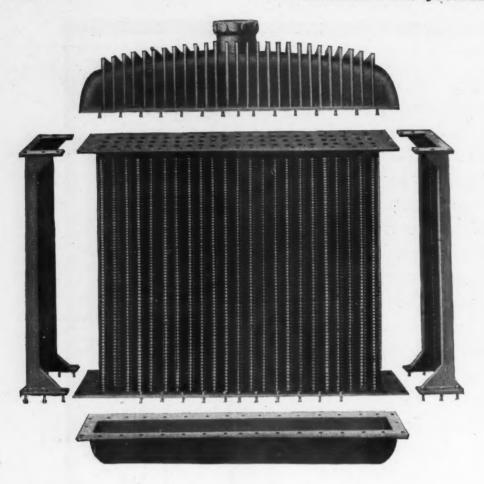
The Company maintains its own garage. The trucks are regularly inspected and mechanical adjustments made promptly so that the trucks are always kept in first-rate condition. The garage superintendent states that the trucks are never out of service except for changing tires.

A complete and accurate system of cost accounting is in effect, and under this careful check the trucks have proved their operating efficiency and economy to the complete satisfaction of the Company's officials.

A number of other interesting installations are shown in our booklet "What Pierce-Arrow Motor Trucks Are Doing in the Contracting Business." We shall be glad to send you a copy.



When Writing, Please Say-"Saw Your Ad. in the CCJ"

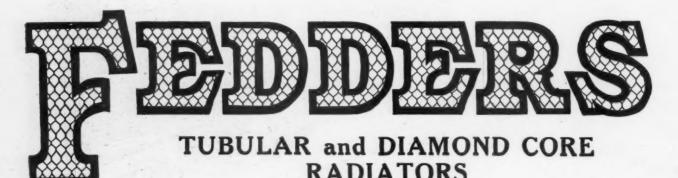


The Fedders Tubular Radiator conforms to the U. S. Government specifications for heavy-duty trucks.

We furnish complete; or tubes with header plates, or tubes only, cut to any length.

We are now in position to take on more business, providing for prompt deliveries.

FEDDERS MANUFACTURING COMPANY, Inc.
BUFFALO
NEW YORK



When Writing, Please Say-"Saw Your Ad. in the CCJ"

# "the truck of continuous service"



Thanks to Maccar's Demountable PowerPlant



TRADE-MARK

Many truck manufacturers have developed motor trucks that are efficient while they are running.

But it remained for Maccar to build the super-efficient truck—the truck of **continuous** service—for Maccar's demountable power plant makes it possible to run this truck even while its power plant is being overhauled, or repaired. Instead of laying up the truck, you simply substitute for its power plant a rental plant which the Maccar dealer carries.

The change takes only thirty minutes, and embraces practically every part that may require attention—the motor, radiator, clutch, transmission, dash, foot pedals and steering gear—all built into one compact, sturdy unit.

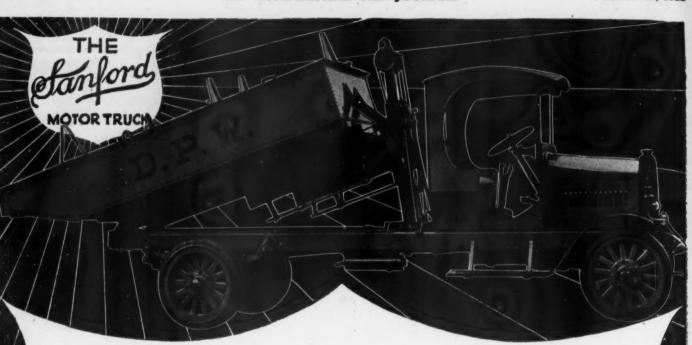
Hundreds of Maccar Trucks are proving that no other truck is so satisfactory or economical. You, too, should be a Maccar user. Write for particulars, today.

## **Specifications**

#### Only the Best is in the Maccar

1½ Ton\$2400
2½ Ton 2950
3½ Ton 3600
5½ Ton 4500
Motor Continental
Ignition Bosch
Carburetor Stromberg
Transmission Brown-Lipe
AxlesTimken
BearingsTimken
DriveWorm
Steering Gear Ross





## Maximum Service with Minimum Upkeep

If we could show you some of the letters we are receiving daily from users of Sanford Trucks as well as from Sanford dealers,

—letters that without exception give unstinted praise to the maximum service qualities and minimum cost of upkeep of our trucks,

-you would immediately join the ranks of Sanford dealers.

For these testimonials are proof that Sanford Trucks in all three sizes— $2\frac{1}{2}$ ,  $3\frac{1}{2}$  and 5 Ton—are easy to sell.

#### IMMEDIATE DELIVERIES

We prepared for the exceptional demand for trucks. We doubled our factory capacity to meet this demand. We are therefore in a positon to take orders for Sanford Trucks for immediate delivery.

Our terms are liberal. So while we still have some territory open for allotment to progressive dealers, write or wire us and let our representative call and put the Sanford story before you. It's well worth your attention.

SANFORD MOTOR TRUCK COMPANY
SYRACUSE, NEW YORK

SANFORD WORM DRIVE MOTOR TRUCK 2½TON-3½TON-5 TON

## STA-TITE Piston Rings

Play an Important Part in the Success of America's Leading Automobiles, Motor Trucks and Tractors.

Every automobile engineer will tell you that the Life, Power, Speed, Hill-Climbing Ability and Operating Cost of a gasoline-driven vehicle depends on its motor.

The strength and power of any motor depends largely on its compression. Perfect Compression means an efficient clean, smooth-running motor.

A motor without Perfect Compression is troubled with improper lubrication, lack of power and an accumulation of carbon.

STA-TITE RINGS give Perfect Compression and overcome these troubles—besides saving on oil, gasoline and repair bills.

STA-TITE RINGS insure proper lubrication and prevent pistons from wearing dry and scoring cylinder.

STA-TITE RINGS are guaranteed to be leakproof.

Dealers You should sell STA-TITE RINGS. The three-piece construction, as shown in illustration above, assures equal distribution of pressure on cylinder walls.

Remember—STA-TITE RINGS are manufactured by the largest manufacturers of piston rings in the world.

Send NOW-TO-DAY for "TWELVE REASONS" why STA-TITE RINGS will prove to be business builders.

### The Piston Ring Co.

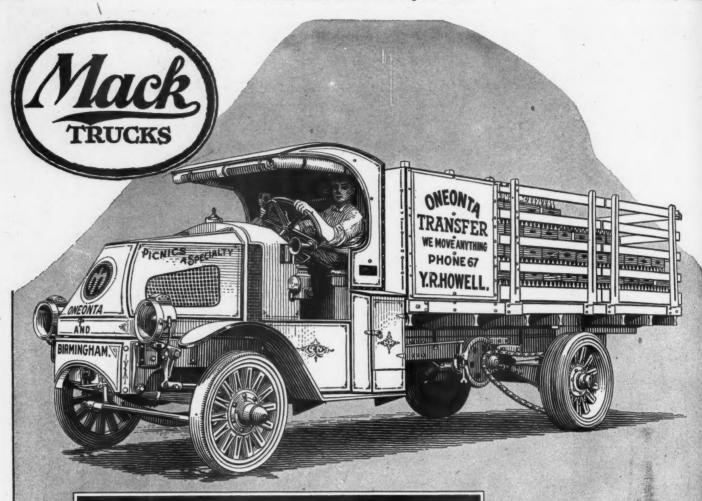
106 Sanford St.

Muskegon, Michigan

Makers Also of "Quality" Snap Rings



When Writing, Please Say-"Saw Your Ad. in the CCJ"



#### DOWN—BUT NOT OUT

Struck by three coal cars being shunted onto a siding—thrown about 20 feet along the track—crashed onto by the car that hit it—this MACK truck went down but not out. When the coal car was removed from it the MACK was right up again and going.

The quick and sturdy "come back" of the MACK was a revelation to its owner, Y. R. Howell of Birmingham, Alabama.

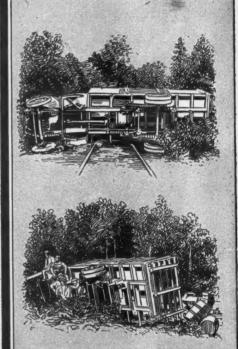
Mr. Howell writes: "This accident has demonstrated to me beyond a doubt that it pays to buy a high grade truck, for had I been in a cheap truck I have no doubt but that I would have been killed and my truck would have been a complete wreck."

MACK trucks are high grade. This accidental test of one proved the durable workmanship of all MACK trucks. They are substantially built to be economically maintained. They have power that prevails—speed that satisfies. You can depend on MACK trucks in routine work or emergency jobs.

MACK trucks are made in sizes of 1, 1½, 2, 3½, 5½, and 7½ tons capacity. With trailers, to 15 tons capacity. Bodies can be designed to meet special requirements.

Write for facts and figures.

INTERNATIONAL MOTOR COMPANY NEW YORK



Performance Counts

## FULLER TRANSMISSIONS

Multiple disc dry plate clutch. The clutch is non-adjustable; it takes up its own wear automatically.

Nickel steel studs case hardened.

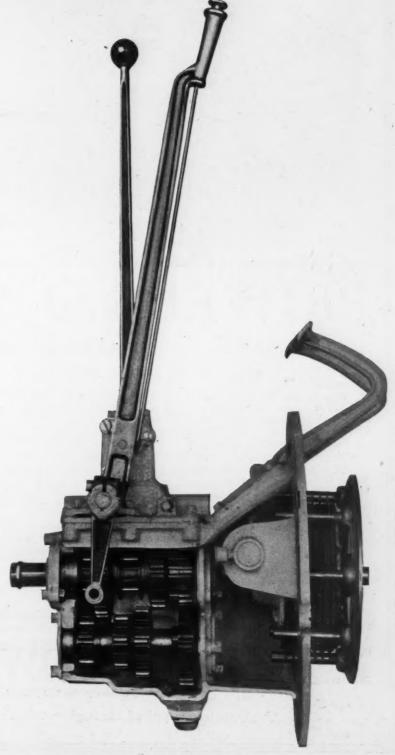
Saw steel discs hardened and tempered.

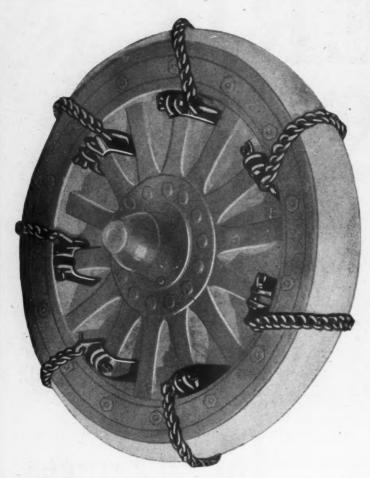
Owing to special heat treatment, discs never cut into studs.

Fuller & Sons Mfg. Co.

Kalamazoo, Mich.

Detroit Sales Office KRESGE BUILDING





## PREST-O-GRIP

**ANTI-SKID CHAINS** FOR MOTOR TRUCKS

## PROVED and APPROVED

#### Prest-O-Grip is the Only

ANCHORED CHAIN THAT IS NOT AN EXPERIMENT FOR THIS WINTER. Last winter they met with

This success was made possible by the positively closed Prest-O-Grip Lock-link, protected by patent, which locks the chain to the wheel and can be attached and detached without the use of any tools. Without this Lock-link no anchored chain device is honestly anchored. Chains that can be attached by a "simple twist of the wrist" can just as easily fall off with a "simple bump on the road," unless positively locked by Prest-O-Grip.

Easily attached and detached. You need never jack up your trucks to equip with Prest-O-Grips.

We supply Prest-O-Grips with either wing nuts or hexagon nuts.

There is a size of Prest-O-Grip for every truck. Write for literature and prices.

#### Prest-O-Grip Achievements

Official Government approval.

Packard Motor Car Co., of Detroit, ordered 63,000 Prest-O-Grip units.

Garford Motor Truck Co., of Lima, ordered 12,350 Prest-O-Grip units.

Best and largest automobile accessory jobbers in this country stock and sell Prest-O-Grips.

Standard Oil, Wells Fargo, Loose-Wiles, General Chemical, Schoenhoffer Brewery, Bell Telephone, National Cash Register, and other large truck owners have ordered Prest-O-Grips repeatedly and have written us enthusiastic endorsements.

There's a reason behind these achievements. Write for it.

Prest-O-Grip is the original successful anchored chain and the only truck chain that gives real satisfaction. Accept no other and beware of imitations

Factory and Sales Offices: Plantsville, Conn.

(Formerly the ROWE-CALK CO.)

Dealers supplied through established accessory jobbers

Executive Offices: Hartford, Conn.



## GMC Roadability vs. Freight Embargoes

HAULING hay 20 miles to Philadelphia on a GMC 2-ton Truck is the way Farmer A. Kenas, of North Wales, Pa., has solved the short-haul freight problem for himself.

Three or four times a week this truck makes round trips to the Pennsylvania metropolis with products of the Kenas Farm—hauling commodities that could not be handled by rail under the present conditions.

GMC roadability has proved out in full during the two years this truck has been making its 20-mile trips in addition to its day-in and day-out work on the farm. And during all this time there has been no bill for repairs due to faulty construction or worn-out parts.

Roadability is the word that adequately describes GMC Truck performance. Roadability is based on merit in truck building. In the factory every vital part is built overstrong and oversize, so that not only ordinary duty but every emergency is met fully.

Write Truck Headquarters about the right GMC Truck for your needs.

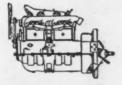
#### GENERAL MOTORS TRUCK COMPANY

PONTIAC, MICH.

New York, Philadelphia, Boston, Chicago, St. Louis, San Francisco

Distributors Most Everywhere

Correspondence with reliable dealers invited



#### Power Plant

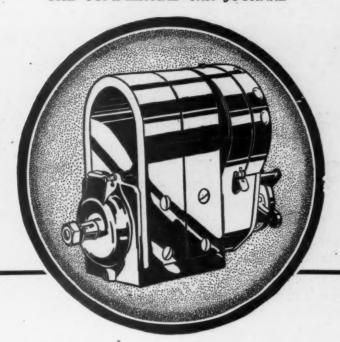
The source of power, the heart of the mechanism—a GMC engine is built for greater strength and endurance than will ever be called for during its life.



GMC engines are simple in construction and dependable in service. Three point suspension guarantees against strain. Adjustable parts are easily reached.

(316)





## "Magnetos are a Mystery to Me!"

"Electricity isn't in my line. With all the makers so strong in their claims how am I to judge which Magneto will give me the best service?"

That is the attitude of many car owners toward the magneto question.

Claims are poor things to judge by; results are what count, especially results in competitive tests. And since you cannot easily make the tests for yourself, follow the decision of those car, truck and tractor builders who are most particular to use the best.

Truck service, with its heavy, constant strains and shocks, is where the difference between magnetos shows most plainly. In the list of 81 truck builders who use Eisemann as standard equipment appear the names which mean most.

#### THE EISEMANN MAGNETO CO.

Sales and General Offices: 32 Thirty-Third St., Brooklyn, N. Y.

Chicago, Ill., 910 South Michigan Ave. Detroit, Mich., 802 Woodward Ave.

THE





## PROGRESS

In big and little centers, in new and old territories, dealers in U. S. Trucks made progress last year—progress so marked that some called it sensational.

They made profits in proportion.

This year's start promises even more.

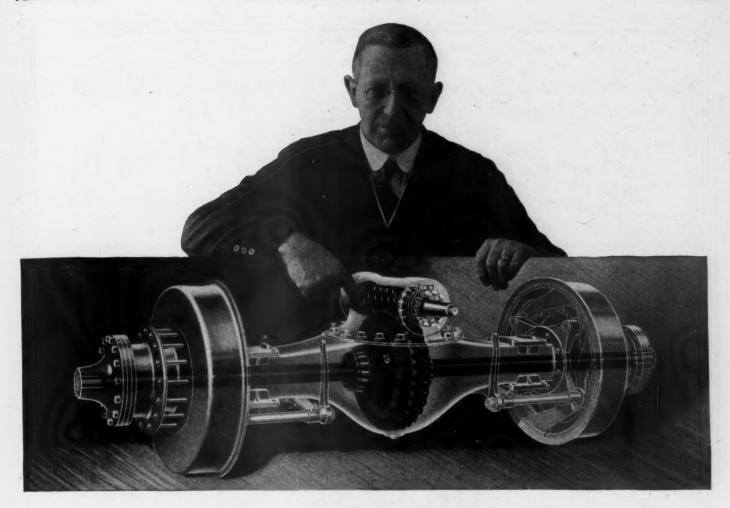
Come in-and win!

Worm Drive,  $2\frac{1}{2}$ ,  $3\frac{1}{2}$ , and 5 ton. Chain Drive,  $2\frac{1}{2}$  ton and  $3\frac{1}{2}$  ton.

The United States Motor Truck Co.
Cincinnati, Ohio



When Writing, Please Say-"Saw Your Ad. in the CCJ"



## Simple, Isn't It!

Inside the sturdy one-piece housing of this worm-drive axle, are only three main working parts — worm, worm wheel and axle shafts.

THE HOUSING is a steel bridge in the form of a tube—which assures the greatest strength in proportion to the amount and weight of metal, in other words, load-carrying capacity without unnecessary weight.

THE WORKING PARTS are all tightly inclosed, absolutely protected against wear, running in a bath of oil, assuring positive and automatic lubrication at all times.

All you need to do is to pour in oil occasionally at the one, easily accessible opening in the housing.

"Ideal conditions for long life," you say, and you're right.

In every point of design and construction Timken-Detroit Worm-Drive Axles are built to outlast the longest-lived, hardest worked truck.

And not a single Timken-Detroit worm-gear unit has ever worn out since the first one was built, over five years ago.

#### Performance the Real Guarantee

The first trucks equipped with Timked-Detroit Worm-Drive are still in service

Many of them have travelled over a hundred thousand miles and some of them over 200,000 and are still going. Not one has ever worn out its worm and worm wheel. Not one has ever had a moment's rear axle trouble of any kind that can, even remotely, be traced to its worm-drive principle.

Write for booklet, F-3, explaining the construction of Timken-Detroit Worm-Drive Axles and the results of their use in fifty-seven of the best known and best built motor trucks.

Sent free, post paid, on request to

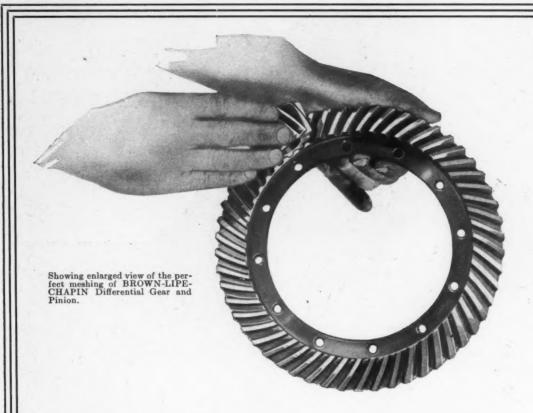


Oldest and largest builders of front and rear axles for both motor cars and trucks.

# TIMKEN-DETROIT FRONT and WORM-DRIVE REAR AXLES

When Writing, Please Say-"Saw Your Ad. in the CCJ"

For Efficient COMMERCIAL Haulage



### Feel How They Roll Into Mesh

It is essential that these gear teeth roll into mesh, perfectly, smoothly, accurately. That means the least possible friction—quiet running gears, with the ability to deliver the maximum of power to drive wheels.

## BROWN-LIPE-CHAPIN DIFFERENTIALS

are perfect in design and mechanical details. All parts are made of highest quality materials with perfect relation to one another.

Rear View Unit Power Plant Type Transmission



For this reason and many others over 80% of the prominent passenger car and truck manufacturers use as standard equipment either one or both BROWN-LIPE Transmissions and BROWN-LIPE-CHAPIN Differentials.

Our engineering departments will help solve your transmission and differential problems. Write for particulars.

## BROWN-LIPE GEAR COMPANY TRANSMISSIONS

#### BROWN-LIPE-CHAPIN COMPANY DIFFERENTIALS

Syracuse

**New York** 

Representatives:

New York: Thos. J. Wetzel, 29 W. 42d Street San Francisco: A. H. Coates, 41 Speare Street Foreign Agent: Benjamin Whittaker, 2 Norfolk Street, Strand, London, W. C. The Seal of
Dependable Performance



Trade-Mark Reg. U. S. Pat. Off.

## THE SECRET OF ACME DEALERS' SUCCESS

For the Acme combines all the known perfections—the features of proved economy—the units to which the engineering world has accorded full 100% service value.

All the points the careful buyer seeks in a truck are brought together in the Acme. This means tremendous advantage for the Acme dealer. It means the Acme truck sells quickest, performs best and, therefore, always stays sold.



#### PROVED UNITS MEAN MORE TRUCK SALES

Just glance at these features—these proved units of Acme Construction:

Timken Axles, Timken Bearings, Timken Worm Drive, Continental Motor, Detroit Springs, Cotta Transmission, Pierce Governor, Ross Steering Gear, Long Radiator, Rayfield Carburetor, Borg & Beck Clutch, etc. Each the master product of the leader in the field, coupled with the skill and experience of the Acme Engineers.

THUS THE ACME ALMOST SELLS ON SIGHT

Now that we've greatly increased Acme production, the Acme opportunity is open to desirable dealers in good territory. It means extra thousands of dollars. Write,

ACME MOTOR TRUCK COMPANY, 192 Mitchell Street, CADILLAC, MICH. Four Models—One to Four-Ton Capacity—Each model oversized in strength and dimensions





Motor transportation is vital in the Great War. Twice, at least, has it snatched France from the brink of destruction, and it still plays an incalculable part in the military efficiency of the Allied Armies.

In France, as well as in America, the Continental Motor sturdily carries on. Through such striking examples of American efficiency, Europe is fast coming to appreciate the paramount value of standardization. Of this principle the Continental Motor has long been a noteworthy exponent; amply deserving the title of America's Standard Motor.

#### CONTINENTAL MOTORS CORPORATION

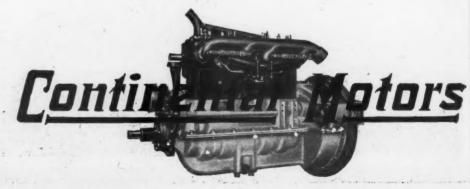
OFFICES:

FACTORIES:

DETROIT, MICH. DETROIT—MUSKEGON

Largest exclusive motor manufacturers in the world

For more than 250 models of automobiles and motor trucks, the world-famous Continental Motor provides the power plant. Not only in our Allies' Armies and in the American Army, but in that still greater civilian army of American motor-vehicle wwners, Continental power serves loyally. Insist on this motor in your next car or truck.





Dearborn Two-Ton Unit attached to Packard Chassis



Dearborn Two-Ton Unit attached to Buick Chassis



Dearborn Two-Ton Unit

## DEARBORN UNIVERSAL TRUCK UNITS



Dearborn Two-Ton Unit



Dearborn One-Ton Unit attached to Dodge Chassis



Dearborn Two-Ton Unit attached to Pratt-Elkhart Chassis



Dearborn One-Ton Unit



Dearborn One-Ton Unit attached to Hupmobile Chassis

## Dealers-Sell the Unit That Fits Every Car

With Dearborn Universal Truck Units you are no longer confined exclusively to any one make of car—the Dearborn fits 'em all—they convert any pleasure car into the most dependable and sturdy trucks of one and two-ton capacity.

Dearborn Universal Truck Units are not an experiment. 1000 Universals are now in active service throughout the country, attached to over 65 different makes of cars. Some of them have been out for over a year. They have proven their strength, efficiency and economy in every instance.

We want live dealers to take on this exclusive line. The opportunity for a big truck business was never so bright. Now is the time to get our proposition. Write or wire at once for particulars and specifications.

#### Dearborn Truck Co. 1248 So. Campbell Ave., Chicago, Illinois

\$350 and a Ford Car makes a Dearborn One-Ton Truck.

\$400 and Any Car makes a Dearborn Universal One-Ton Truck.

\$450 and a Ford Car makes a Dearborn Two-Ton Truck.

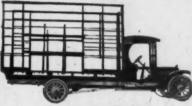
\$500 and Any Car makes a Dearborn Universal Two-Ton Truck.



Dearborn One-Ton Unit



Dearborn Two-Ton Unit



Dearborn Two-Ton Unit



Dearborn Two-Ton Unit



Dearborn Two-Ton Unit



Dearborn Two-Ton Unit

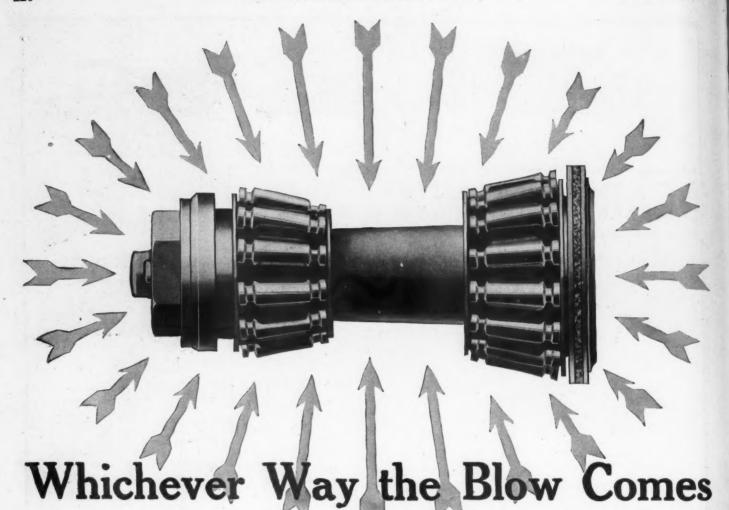


Dearborn One-Ton Unit attached to Maxwell Chassis



Dearborn One-Ton Unit attached to Buick Chassis

Whichever



Up-down-sidewise from all directions-at all angles-and with all degrees of intensity—a shower of blows is rained upon the bearings in the wheels of your motor truck.

If all of these blows were straight blows of a load down on the bearing a set of balls or parallel-sided rollers would carry it.

If all of the shocks were direct from the side a set of "thrust bearings" would do the work.

But neither of these conditions corresponds to actual service.

The bearing in actual service has to resist not one or two simple loads, but countless loads from innumerable directions. A never ending shower of little blows amounting to a fine vibration, is added to heavy pressure, or the sharp strong blow that comes from a drop into a rut.

The result is a force that is always changing in direction—quality—magnitude; never twice the same.

But it is just such hard service as this that Timken Bearings are made to sustain.

The tapered construction of the Timken Roller Bearing also makes it easy to take up the wear which will in time affect any type or design of bearing.

As the rollers wear smaller, the cone can always be advanced a little further into the cup. By a part turn of an adjusting nut you have a brand new bearing.

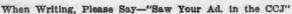
You can see what truck builders think about Timken Bearings by the extent to which they actually use them, at the points of severe service-wheels, knuckle heads, pinion or worm, transmission, and differential. This is all given in the booklet, "The Companies Timken Keeps." Just as a matter of keeping posted you ought to have a copy.



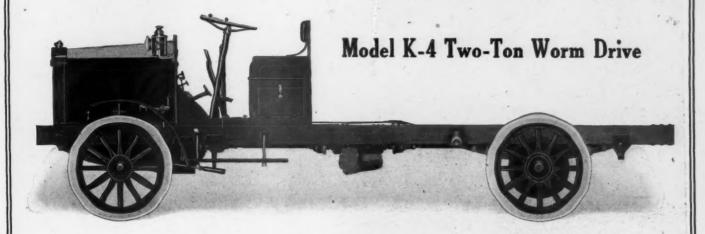
THE TIMKEN ROLLER BEARING CO. Canton, Ohio







## The New Dorris Standardized Truck



#### GENERAL CHASSIS SPECIFICATIONS

MOTOR—Dorris Perfected Valve-In-Head Motor of original design, all working parts completely enclosed, four cylinders, east en bloc, detachable head, affording easy access to valves, 4½" bore, 5½" stroke, N. A. C. C. rating 28.9 Horsepower. Crank Shaft 2¼" in diameter supported by five main bearings, reducing wear and vibration to a minimum. Five bearing Cam Shaft driven by exceptionally large helical gears. Motor mounting special Dorris three-point suspension.

LUBRICATION—Full high pressure force feed to all main bearings, including connecting rod and wrist pin bearings. Pump over provides continuous oil bath over all valve mechanism.

IGNITION—Bosch D U 4 straight high-tension magneto.

CARBURETOR—Stromberg Model M-2 with Duplex dash control and U tube. Specially designed Dorris hot spot in intake manifold insuring easy starting and low gas consumption.

GOVERNOR—Governor of Dorris design, built integral with motor completely enclosed, adjustable, sealable and trouble proof.

CLUTCH—Dry Multiple Disc, Unit with Motor, completely enclosed TRANSMISSION—Suspended a midship, four speeds forward, one reverse. Gears 3½% nickel steel, heat treated, completely enclosed in oil tight case.

DRIVE—Tubular drive shaft equipped with extra large Spicer Universal Joints. Joints in perfect alignment under load.

SPRINGS—Chrome V a n a dium Steel, heat treated. Front 42" long, 2½" wide. Rear 56" long, 3" wide. Springs take drive and torque eliminating a large number of wearing parts.

RADIATOR — Extra large, cast shell, core vertical finned tubes. Cushion mounted on motor, free from frame distortion or road shocks.

FRAME—Cold pressed from hot rolled stock, channel section 6" deep, 2½" flange, ½" thick. Flexible construction.

STEERING GEAR—Extra large wheel 20" in diameter, worm and worm wheel standardized construction, completely enclosed, fully adjustable for wear.

FRONT AXLE—Drop Forged "I" beam section, knuckles mounted on Timken roller bearings.

WHEELS—Wood artillery type, second growth hickory, mounted on Timken roller bearings. REAR AXLE — Timken - David Brown Worm and Worm Wheel,
completely enclosed in reinforced
pressed steel housing. The most
efficient type of final drive construction conceivable.

TIRES—Front, 36x4" single. Rear, 36x7" single, pressed on type. Firestone, Goodyear or Goodrich, optional.

control.—Left drive, center control, foot accelerator. All control levers and pedals extra size and strength.

WHEELBASE — 144" and 162", optional.

TREAD—58½" front and rear.

BUMPER-Wood, Steel Faced.

FENDERS—Front only, attached to frame and running boards.

CHASSIS WEIGHT-4980 pounds.

FINISH—Metal primer and two coats of lead.

EQUIPMENT—Oil pressure gauge, shaft driven speedometer, oil side and tail lamps, driver's seat with Marshall spring cushion, foot operated diaphragm horn, jack and complete set of tools.

EXTRA — Electric starting and lighting equipment extra.

PRICE-Price upon application.

This new Model K-4 embodies in detail all that has been proven to be the best in motor truck construction—built to the enviable Dorris Standard—engined with the marvelous Dorris power plant

MANUFACTURED BY



THE DORRIS MOTOR CAR
COMPANY

ST. LOUIS

MISSOURI





of New Departures for their chosen jobs. Chance or risk have had no place here. Each bearing has a known capacity and each recommendation a liberal "bridgebuilder's factor of safety."

When a layout has our engineers' O. K. you can bank on the performance of those bearings!

More and more men are learning that fact every day. If you are yet to be shown—all we ask is the opportunity.

THE NEW DEPARTURE MANUFACTURING COMPANY Bristol, Conn. & Detroit, Mich.

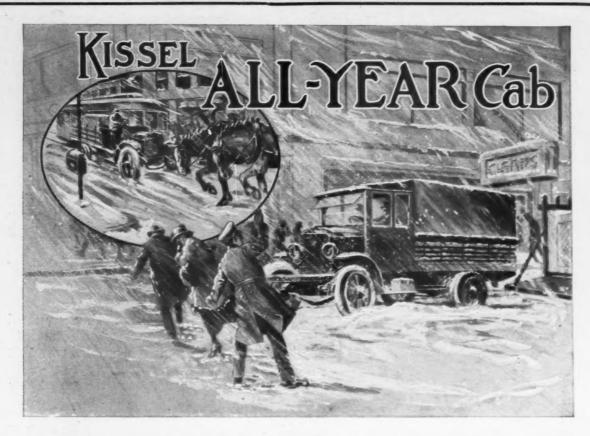
Conrad Patent Licensee.

New Ball



28





## Snow-Proof, Wind-Proof, Rain-Proof

THE past winter has proven the acid test for the ALL-YEAR Cab. By fully protecting drivers, uninterrupted schedules were maintained, increasing financial results for owners.

As this winter, so this spring, the ALL-YEAR Cab will afford your drivers full protection from March winds and Spring rains, increasing their efficiency and eliminating unnecessary layups of your trucks.

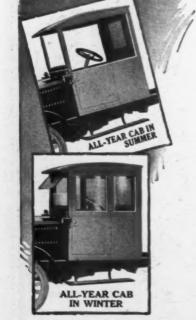
In summer the ALL-YEAR Cab is quickly changed into a cool, open housing by removing the winter attachments, consisting of side, door and rear windows.

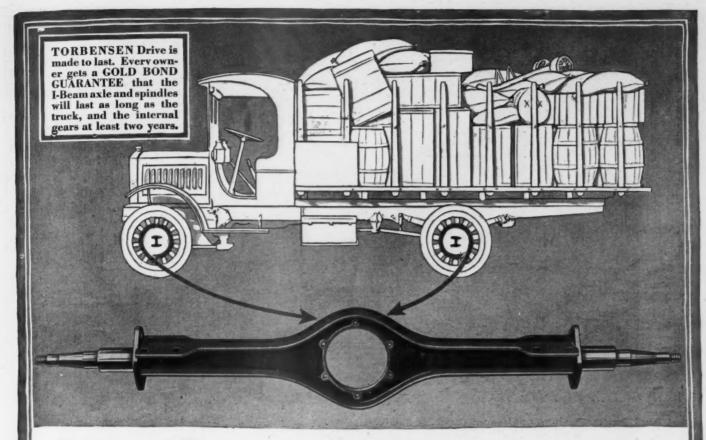


There are five new sizes—a truck for every business—a size for every purpose. The Kissel built-in strength in frame, axles, springs, brakes and other structural parts—the sturdy Kissel-built power plant—equal to all power demands, insure dependable performance and reliable service necessary to maintain continuous haulage and delivery schedules.

Investigate the new Kissel Trucks and the ALL-YEAR Cab. Send for literature and specifications, or see your nearest Kissel dealer

Kissel Motor Car Company Hartford, Wis.





## Strength your Customers can see

The patented, forged-steel I-Beam carries all the load. The driving parts are confined entirely to driving.

The strength and lightweight of the I-Beam makes Torbensen

Drive long-lasting and econom-

Driving at the Wheel and near the Rim gives great driving leverage—great pulling power.



g

Your customer knows that an I-Beam is the strongest and lightest load carrier. He knows that in bridges and all structural work I-Beams are employed to carry the load. He knows that all front axles are I-Beams.

He can see that the rear load of a Torbensen Drive Truck is carried on a forged-steel I-Beam.

He doesn't have to be an engineer to understand that a Torbensen, because of its I-Beam, is stronger and yet lighter than any other type of truck axle drive. When you tell him that the Torbensen

I-Beam is patented and that no other rear axle drive does or can have this patented I-Beam, you clinch his belief in Torbensen superiority.

Your customer also knows that power applied near the rim of a wheel is more effective than power applied at the hub.

He can move a truck by hand when he takes hold at the rim, but he cannot stir it with a wrench on the hub.

So he understands at a glance the advantage of the Torbensen Internal Gear Drive.

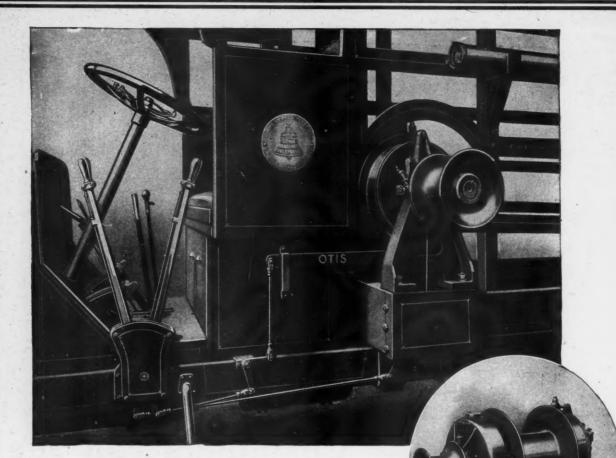
Once more, your customer's common sense tells him that driving gears which are subject to road shocks and the full strain of a truck load cannot work as efficiently nor last as long as driving gears which are relieved from all load and road strain. He sees that Torbensen driving gears have nothing to do but drive. They work as freely as the gears of a stationary lathe.

It is because the soundness of Torbensen principles is self-evident to the non-technical buyer that more Torbensen Driven Trucks are sold than any other type.

#### THE TORBENSEN AXLE COMPANY

Cleveland, Ohio

Largest Builder in the World of Rear Axles for Motor Trucks



Increase the Value and Usefulness of Your Trucks by Equipping Them With the

## OTIS POWER WINCH

HAT hitherto was accomplished with much labor and the expense of much unnecessary time is now made possible to accomplish swiftly and easily through the use of the Otis Motor Truck Power Winch.

Trucks which hitherto have been used as merely a means of transportation are transformed by the installation of the Otis Power Winch into an elevating, self-loading machine.

The Otis Power Winch can be utilized in numerous practical and effective ways. Good business prompts one to get the utmost efficiency and value from every investment, and your trucks will not be attaining their maximum of utility until they have been equipped with the Otis Power Winch.

Keep abreast of the times by sending in at once for full information. All particulars with illustrative data will be furnished upon request.

Industrial Department

#### OTIS ELEVATOR COMPANY

Eleventh Avenue and Twenty-Sixth Street, New York City

He Profits Most Who Serves Best

# MATHER SPRINGS

Scientifically Heat-Treated

Unequalled for

Lightness, Flexibility and Endurance

Genuine made only by

THE MATHER SPRING COMPANY

Toledo, Ohio

# Don't Wait and have a Great Future behind you!

TRANSPORTATION is the biggest selling and most profitable commodity in the world today.

Right now is the time to become a Garford Motor Truck Dealer.

Never were such opportunities for efficient motor trucks.

And business men will **not** risk experiments **now**.

They know Garford Motor Trucks are efficient, reliable and durable.

Garford design and construction backed by Garford sales policy will assist you in building a profitable and satisfactory motor truck business.

Wire or write us at once.

Address Dept. 406.



The Garford Motor Truck Company, Lima, Ohio

Manufacturers of Motor Trucks of 1, 1½, 2, 3½, 5 and 6 ton capacity. 4½, 7 and 10 Ton Tractors

The Garford Road Builder

## Nothing Cheap About This Republic— It Carries a Babcock Body

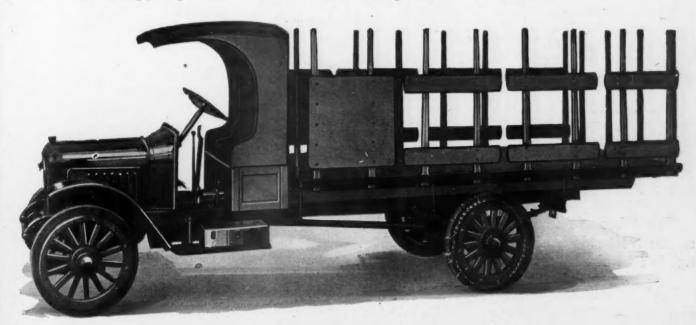
## BABCOCK BODIES

are not used as **price-makers** to help sell a truck. Recognized quality commands a price--- and is worth it. Don't be persuaded by a slick coat of paint! The Babcock patent plate protects a **Steel Construction**, which means a lighter, stronger, better body.

We are now producing in quantity lots for immediate shipment, truck bodies ranging all the way from 3/4 ton to 3 tons capacity, with loading space from 8 up to 12 feet.

Republic and other truck dealers, who want good bodies at quantity prices and want them quick, should post themselves on Babcock quality, prices and service.

With this cab and platform as a base, our unit construction permits a wide range of combinations in the way of stake and rack sides, or canopy top with curtains, screens or panels.

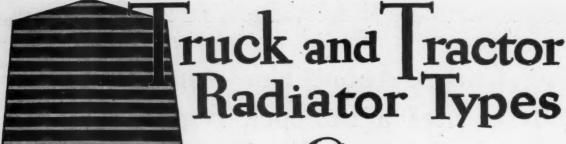


H.H.BABCOCK COMPANY

WATERTOWN .

FOUNDED 1845

MIBAN MOISIN



Greater cooling per cubic inch of core – and per pound of metal with the continuous fin tubular radiator.

THE construction of the continuous fin tubular type of radiator is distinctly superior from the standpoint of cooling. This is because of a better utilization of the metal.

An important feature in the efficient utilization of metal in automobile cooling is entirely free air circulation and the continuous fin tubular type affords this to a marked degree.

There is no idle time for the tractor and but little for the truck. The engine labors continuously. It must have efficient cooling all the time. Conditions under which the fin truck or tractor engine works are entirely

tractor.

truck or tractor engine works are entirely different from those under which the pleasure car operates.

fin tubular type of radiator has a very definite

meaning to the engineer designing a truck or

The problem is not to heat a

given volume of air but to cool a given volume of water with the whole atmosphere to use freely as a cooling medium. Therefore a free air

passage is a prime requisite.

The continuous fin tubular radiator combines such free air passages with a maximum of exposed radiating area and a minimum weight of metal,

hence its superiority as a radiating element.

The tubes are in rows and the fins run across from side to side leaving a clear passage for the air.

Each fin is a complete unit of radiation, and consequently the entire core radiates evenly. Every ounce of metal does its full share of the cooling.

This cooling superiority of the continuous

The basic principle of a radiator is to cool with the least use of metal and greatest strength. That is what we claim for the continuous fin tubular type of radiator.

The facts we have given in this discussion must be con-

sidered seriously by the truck or tractor manufacturer if the best service to owners is to be assured. And we believe that those manufacturers who are now using this type

of radiator are recognized as prominent among the leaders in the truck and tractor field.

The future of the truck and tractor industry is so great that we feel intensely interested in helping engineers secure the most efficient construction.

This company manufactures all types of radiators for both commercial and passenger motor vehicles.





Electric Commercial Vehicles equipped with "Ironclad=Exide" Batteries "deliver the goods" every time and all the time.



There's punch, pep and power in every "Ironclad=Exide"—built right into it; with its special plate construction and other exclusive features.

Since the first "Tronclad-Exide" was installed in electric vehicle service, it has been "doing its bit" consistently and dependably.

It is doing it today all over the United States—it will do it for you.

### THE ELECTRIC STORAGE BATTERY CO.

The oldest and largest manufacturer of Storage Batteries in this country

1888 PHILADELPHIA, PA. 1918

New York Washington Chicago Denver Kansas Cit Cleveland Boston Detroit

Rochester St. Louis Minneapolis Atlanta Toronto

# **Detroit Trailers**

1½, 3, 5 and 7 Ton Capacities



We Also Make Pole and Semi-Trailers

## Be a Leader-Don't be a Trailer!

ANATION-WIDE demand exists for trailers, because they efficiently, economically and effectively help firms and corporations to undo transportation tangles. Detroit Trailer dealers are meeting those demands, making big profits and establishing a successful future business. Get your share of this virgin trailer business—be the leader in your territory—don't be a trailer

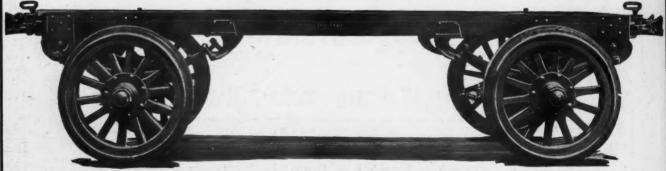
Detroit Trailers are 'way past the experimental stage. They have won their spurs in hard service. The best materials are used in every detail of construction. Sidesway, which adds strain and drawbar pull, increasing

tire and gasoline costs, is entirely eliminated in Detroits. The illustration above shows our patented steering device, which makes reversing easy. It can be quickly and securely locked or unlocked. This unequaled Detroit feature adds materially to trailer utility. The springs, radius rods, and our own special automatic drawhead are a few more points which make Detroit Trailers superior to all others.

We repeat—be a leader, don't be a trailer. Write today and get the Deroit Trailer agency proposition before one of your aggressive competitors gets it. The big worthwhile profits come from leading and not following.

### DETROIT TRAILER CO., Inc., 671-73 Atwater St., East, Detroit, Mich.

Canadian Branch: Walkerville, Ont.



End and Side Views of 5 Ton Chassis

# Responsibility

BACK of the Lauton Truck Unit is a financial responsibility aggregating millions of dollars. The largest maker of truck axles in the world—Torbensen; one of the biggest and solidest tire manufacturers in the country—Kelly-Springfield; a spring maker who ranks among the first—Standard Parts Co.; the largest frame manufacturer in the United States, and one of the oldest and best wheel makers, make up a chain of responsibility that has no weak line. These big, established firms each individually guarantees its part of the Lauton Truck Unit.

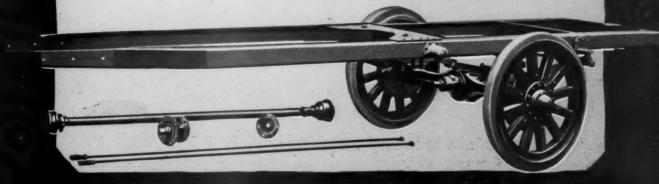
The Lauton Truck Unit represents a greater aggregate of engineering knowledge, a wider range of truck experience, and a greater degree of financial responsibility than have ever before been combined in a truck unit.

The Lauton Truck Unit is not a newcomer in the field. It is an established, successful, well known product, of which thousands are in use.

It has always been fundamentally correct in design and engineering, and it is built by men who have always stood for sound and honest business methods and public confidence.

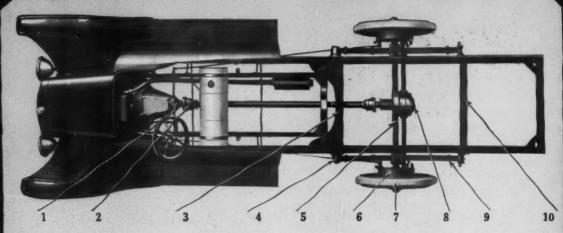
The Lauton Truck Company

Youngstown, Ohio



LAUTON TRUCK UNIT-

# Shaft Drive



- 1—The Lauton exclusive double ball bearing shaft extension which prevents "whipping" and insures long life. Has double ball bearings.
- 2 —Forward universal joint, strong and durable.
- 3 —Extra strong gusset plate.
- 4-Extra heavy spring brackets.
- 5 —Solid forged Ibeam for carrying load.
- 6—Brake drums 12 inches in diameter.
- 7—Solid tires on strong 32" wheels, with heavy ash spokes.
- 8—Heavy differential. Does away with troubles due to using Ford axie as jack shaft.
- 9—Heavy, semielliptic springs, 46° long, ten leaves.
- 10 Frame cross member. Gives extra strength and rigidity.

#### SPECIFICATIONS

- FRAME—Pressed channel steel, four inches deep, two inches wide, 169 inches long. Frame extends full length of Ford frame and is heavily reinforced at rear with heavy cross plates extending entire width of frame.
- AXLE—Torbensen Internal Gear.
  Absolutely the best truck axle made. Heavy I-Beam carries entire load. Driving pinion engages large internal gear, giving tremendous leverage. Nearly fifty thousand of these axles in daily use throughout the world. Simple, accessible, durable.
- BEARINGS—Large, heavy duty roller, guaranteed for three and one-half ton load.
- BRAKES-2½ x 12 inches. Operated by 3/8-inch rods. These

- brakes are built with the same margin of over-strength that characterizes every part of the Lauton unit.
- WHEELS—32 inches in diameter.

  Spokes 2 x 2 inches. Seasoned ash spokes.
- TIRES—Solid, standard make. 32 x 3½ inches.
- SPRINGS Perfection springs made by the Standard Parts Co. Semi-elliptic, 46 inches long by 2½ inches wide. Ten leaves.
- WHEELBASE-127 inches.
- LOADING SPACE—9 to 11 feet back of driver's seat, and up to 6 feet wide, according to body.
- SPEED—15 to 20 miles an hour on high.

\$390 f. o. b. Youngstown, Ohio

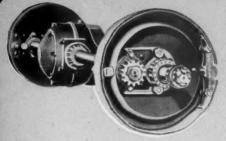
#### Lauton Truck Unit for Cadillacs

This unit converts Cadillac models of 1911, 1912, 1913 and 1914 into first-class delivery trucks. The extra heavy pressed channel steel frame bolts or is riveted to Cadillac frame. Torbensen Internal Gear axle; heavy duty roller bearings; Vanadium steel springs; extra heavy wheels; 34 x 5 Kelly-Springfield solid tires; large brakes. This unit is designed especially for the Cadillac and makes an extraordinarily sturdy truck.

\$490 f. o. b. Youngstown, Ohio

# IAUTON

# Internal Gear Axle



THE Lauton Truck Unit is built around the famous Torbensen Internal Gear Axle—the most successful as well as the most widely used truck axle ever built.

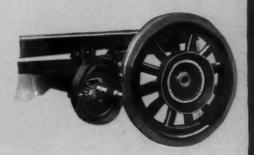
The load is carried on a heavy I-Beam which is wholly separate from the power transmitting parts of the axle. Actual tests prove that Torbensen Internal Gear Drive converts 90% of the engine power into useful work because the driving pinion engages the internal gear at a considerable distance from the axle, thus gaining tremendous leverage.

The combination of shaft drive and internal gear axle makes the Lauton Truck Unit the most modern and efficient truck unit that is built.

The use of a Lauton Truck Unit makes a converted truck that is actually sturdier, more powerful and more durable than many a regular truck.

No other truck unit built contains such high grade materials throughout as the Lauton Truck Unit.

Yet in spite of its quality and prestige, the Lauton Truck Unit sells at the standard price.



TRUCK UNIT~

The Lauton Truck Co.

310 Stambaugh Building

Youngstown, Ohio

# Exclusive Territory

THE Lauton Truck Unit is established upon a national basis. We have anticipated the tremendous demand for a high grade, correctly designed truck unit, backed by financial responsibility and facilities for large scale production.

That demand is here now. This year will see five times as many passenger cars converted into trucks as have ever been converted before. The government demand for trucks has cleaned up the truck producing capacity of the nation. Thousands to whom price is no factor and who might buy complete trucks, cannot do so and are obliged to buy truck units.

In addition there are twice or three times as many shrewd men who realize that a Lauton Truck Unit and a Ford or Cadillac chassis makes a converted first-class truck at about half the price.

Truck dealers who cannot get trucks to sell, passenger car dealers who cannot get passenger cars, shrewd garage and accessory men all over the country are snapping up the Lauton Truck Unit dealership for exclusive territory.

Don't let your competitor beat you to it. If the money-making Lauton dealership in your town is open, get it for *yourself*. That means quick action. Do it now.

### The Lauton Truck Company

Youngstown, Ohio

	18 $18$ $18$
THE LAUTON TRUCK COMPANY Youngstown, Ohio	Wilt
Gentlemen:—Please consider this notification that I am interest the LAUTON TRUCK UNIT and desire full information, terms am in position to handle your proposition and am at present in the less checked below:	s, etc.
Name of Individual	
Firm Name	
Street and No.	
CityState	
Truck Passenger Garage Implement Dealer Dealer	



When Writing, Please Say-"Saw Your Ad. in the CCJ"

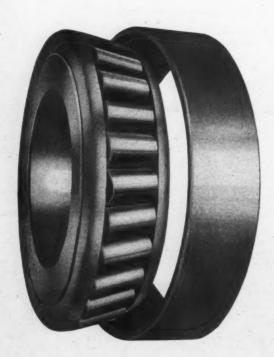
# WRIGHT Taper Roller BEARINGS

The absence of any cage or other auxiliary structure saves the Wright bearing from all troubles due to "cage" distortion.

The braking action of cages, which is always exerted, on rolls is entirely eliminated in this type of bearing, thus allowing proper functioning of the rolls under all conditions.

WRIGHT ROLLER BEARING CO. CROZER BUILDING PHILADELPHIA, PA.

Factory: Spring City, Pa



## ATWATER KENT

## SCIENTIFIC IGNITION

Tis but natural that Atwater Kent Scientific Ignition with its enviable reputation for performance, should be chosen for various war duties. In a dozen ways Atwater Kent Ignition is filling a war-time need and filling it dependably, efficiently and economically.

Its big, hot, perfectly synchronized spark gives maximum power under all conditions—reduces gear shifting and motor stalling, facilitates starting and saves gas.

Dealers are doing an ever-increasing business in replacing truck magnetos with Atwater Kent Ignition.

## ATWATER KENT MFG.WORKS Philadelphia

WRITE FOR INFORMATION TO 4945 STENTON AVENUE





BURDENS above—bumps from below—neither affect Higgins Quality Springs for Trucks. Their service strength is mightier than any mauling haulage can give them. Leaves nibbed together at center. No center bolt—hole or hump. No danger of breakage at center or any other section. Durable, Dependable. Least in cost—because longest in service.

Write us your requirements—today. Let us submit designs and prices for your consideration.

Higgins Spring & Axle Co.

Racine, Wisconsin

When Writing, Please Say-"Saw Your Ad. in the CCJ"





### One truck with 33 bodies • • One chassis that anticipates the needs of 33 lines of American business = = =

ATLAS dealers have no body problems—sales are not lost by inability to make delivery. The Atlas dealer can compete with anyone.

MAXIMUM CAPACITY: 1500 lbs.

Motor: Four cylinder 3½ x 5 cast en bloc "L" type, detachable head, 3 point suspension. Cooling Thermo-Syphon. Lubrication, splash, constant level system plunger pump.

1½ in diameter.

15% in diameter. At 1600 R.P.M.

IGNITION: Battery ignition, Remy distributor.

CARBURETOR: Automatic float feed, dash adjustment. Hot air connection.

connection.

RADIATOR: Copper, Honeycomb, 3-in. core. Ample capacity for cooling motor.

RADIATOR: Copper, Honeycomb, 3-in. core. Ample capacity for cooling motor.

TRANSMISSION: Selective three speed forward and reverse, special heavy-duty truck type. Full roller-bearing. Extra large face gears, 1½ in. short shafts, designed to withstand hard service.

CLUTCH: Dry plate Atlas Special Borg & Beck, integral with transmission. Bearings oiled through hollow shaft from transmission.

transmission.

Drive: Hotchkiss Drive. Enclosed type dust-proof universal

DRIVE: Hotchkies Drive. Enclosed type dust-proof universal joints, extra heavy.
CONTROL: Left hand drive, center gear shift lever, internal spark and throttle on steering wheel, bevel gears at bottom. Accelerator pedal attached to power plant.
STEERING GEAR: Double screw type Lavine Heavy-Duty. Adjustment for wear automatic, 17-in. wheel. Double throttle. FRAME: Pressed steel channel section 4x2x3-16 in., 3 in. at offset. FRONT AXLE: I-Beam Section, 6 in. knuckle, adjustable ball bearings in hubs.

REAR AXLE: Full Floating. Helical Bevel driving Gears, pressed steel housing, inspection plate at rear, Brown-Lipe differential, Bower Double Roller Bearings in rear wheels and right of differential. Gurney Thrust Bearings at left and front.

GEAR RATIO: 4¾: 1.

BRAKES: Brakes external contracting. 12-in. dia., 2-in. face, 3-16 weight Internal expanding. 12-in. dia., 2-in. face, 3-16 weight.

SPRINGS: Semi-Elliptic Front 2 x 36 x 7 ply. Semi-Elliptic Rear 2 x 46 x 9 ply. Special high-grade oil tempered double heattreated with bushed eyes. Hardened bolts and grease cups, nuts with cotters.

WHEELS: Wood, Artillery type, second growth hickory, 1¼-in spoke

WHEELS: Wood, Arthlery type, second grown incomes spoke Rims: Clincher, quick demountable type, furnished with spare rim and wrench.

Thes: Lee 31 x 4 Standard. Non-Skid rear.

Tire Holder: Tire Holder bolted to running board with lock.

WHEELBASE: 106 in. regular. 118 in. special.

Gas Tank: Capacity 10 gallons, built on chassis.

EQUIPMENT: Remy Electric Generator, Willard SJW4 No. 317

Starting and Lighting Battery. Electric Head and Tail Lights. Ignition, lighting and dimming switch plate, with ammeter.

Lights. Ignition, lighting and dimming switch plate, with ammeter.

HORN: Standard make hand-operating horn.

WINDSHIELD: Heavy double ventilating plate-glass shield without stay braces.

BUMPER: Spring type bumper.

FENDERS: Complete set of four fenders, crown pattern; rear fender extra long.

RUNNING BOARDS: Running boards covered with Battleship Linoleum and edges bound.

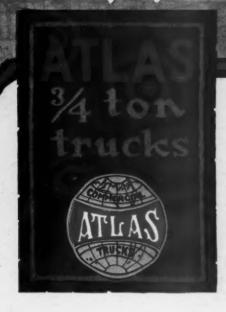
BODY: Any one of thirty-three styles, open six post panel, foredoor, Vestibule and semi-Vestibule front

STARTER: Starter Optional. Motor equipped ready to install.

Specifications subject to change without notice.



When Writing, Please Say-"Saw Your Ad. in the CCJ"



You can sell and deliver three complete Atlas truck jobs while your competitor is getting one body

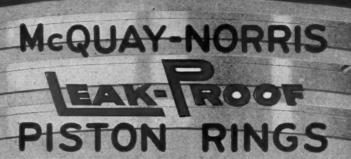
THE whole light truck field has no similar proposition to offer 'dealers. Only the Atlas can give you a choice of 33 body types—ready for instant delivery. Only the Atlas gives you a genuine truck that is readily adaptable to 33 lines of modern business.

The Atlas ¾-ton truck is the only sensational feature of a truck-hungry market. Flexible truck designed frame and ton-truck axle gives you 40% overload margin—and practically ton capacity.

Write for catalog.

The bigger piston displacement gives you a power punch more than ample to care for that surplus load The Atlas will sell anywhere—run anywhere and suit any line of business in which a less - than - ton truck can be used.





It will pay you many times over to put in the best piston rings you can buy. Remember—in piston rings you are buying power, the control of fuel and oil consumption and assurance of dependable motor service all through the season ahead.

The one thing that measures piston ring efficiency is equality of tension. The ring must press evenly outward upon the cylinder wall at every point of its circumference—firm enough to prevent gas or power loss, yet light enough not to cause undue friction loss or cylinder wear. This is fundamental to maximum power production and is accomplished by the exclusive design of McQuay-Norris \Langle Algebra \text{Roop} Piston Rings.

The only piston ring composed of two sections of the same size and strength, exerting equal radial pressure. These, when fitted together, expand against each other, thus equalizing the radial tension of the whole ring, and thus makes the bearing pressure even all around.

McQuay-Norris LEANTHOOF Piston Rings have seven years of successful performance records behind them. Seven years of trial and test. Seven years of steadily growing prestige with engineers and engine users, founded upon what they've actually done in increasing motor efficiency and economy.

Send for Free Booklet

"To Have and to Hold Power"—a truthful, clear explanation of piston rings—their construction, development and operation. Write Dept. C.

Manufactured by

### McQuay-Norris Manufacturing Company, St. Louis, U.S.A.



New York Los Angele Chicago Seattle Atlanta Pittsburgh Kansas City Dallas San Francisco St. Paul

Canadian Factory: W. H. Banfield & Sons, Ltd., 372 Pape Ave., Toronto

IS YOUR ENGINE AN OIL GUSHER?

Many modern motors have excess oil trouble—they are oil pumpers. There is a flow of oil in the cylinders far in excess of what piston rings were planned to control. These motors need one McQuay-Norris Supercut Ring in the top groove of each piston with McQuay-Norris \(\text{\text{Local}}\) where the piston with McQuay-Norris \(\text{\text{Local}}\) representations of each piston representation representation of each piston representation repre

an oil Gusher?
economy. The McQuay-Norris & supercyl is a specially constructed ring with an Oil Reservoir which collects all of the excess oil from the cylinder wall on the down stroke of the piston, leaving just the film necessary for proper lubrication. It will keep cylinders and spark plugs clean, do away with smoky exhausts and reduce oil consumption.



In 5 years, no Stewart has ever worn out

## Stewart MOTOR TRUCKS

### Stewarts pay for themselves, all over the world—

They serve thousands of satisfied owners in over 500 American cities.

—They give "pay-for-themselves" service in Canada, Alaska, Cuba, South America, Europe, India, Australia—in fact, the whole world over.

—The Merit that has made the Stewart wanted throughout the world, will justify investigation by any truck-user.

—Yes—and despite Stewart quality—Stewart prices are from \$209 to \$387 under the average of all other truck prices. This is due to the Stewart policy of "big volume at small-profit-per-truck."

#### **Stewart Motor Corporation**

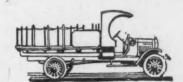
Buffalo, N. Y., U. S. A.



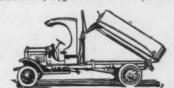
Model 6-B, 3/4 ton chassis \$850



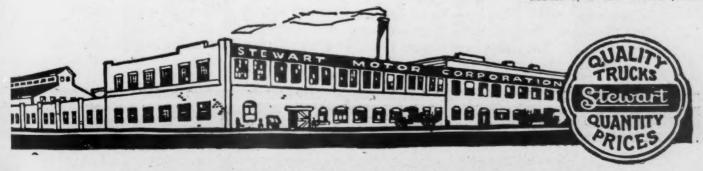
Model 8, 1 ton chassis \$1395



Model 9, 11/2 ton chassis \$1750



Model 7, 2 ton chassis \$2295





### A Simple Twist of the Wrist

That's all that's necessary to fasten a Giant Grip chain to the clamp. It's the simplest thing in the world, and any driver can apply Giant Grips in a jiffy in any place at any time. It's such a contrast to applying other anti-skid devices that Giant Grips sell on sight and easily overwhelm all competition.

Giant Grip parts are drop-forged, hence very strong and durable. The clamps fit the spokes, and the special "Gripoid" lining lasts as long as the clamp. The chains have twisted links in that part which lies across the tread, so there is no danger of cutting the tire. At each end of the chain is a hook link with a T-shaped arrangement which is inserted in the keyed eye of the eye bolt on the clamp by a simple twist of the wrist. No tools are needed, there is nothing fragile to break, nothing complicated to work, nothing to cause trouble or lose time. Straight links at each end make it easy to take up slack at any time.

Giant Grips are the simplest in construction, easiest to apply. They are usually applied to every other spoke, and a truck so equipped is effectually protected against skidding and getting stuck in mudholes.

### **Big Market Now for Giant Grips**

There has long been a strong demand for an efficient anti-skid for trucks. A number of devices have been put on the market, but all fell short of the purpose in one way or another—until the advent of the Giant Grip.

The truck world soon saw that [this was different and overcame the objections to the other types. It was so simple, so easy, so durable, and so efficient, that to see it was equivalent to buying it. Immediately a demand sprang up wherever Giant Grips were shown. It has grown stronger and stronger as the days went by, and Giant Grips proved they were more than equal to every emergency. Giant Grip dealers were soon doing a big business and making worth-while profits.

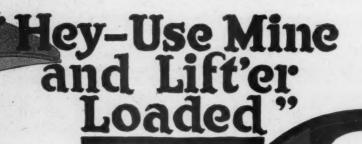
There are scores of truck owners in your locality who are sick of paying bills caused by skidding trucks, who are weary of losing precious time being stuck in mudholes, who are eager to buy a **practical** device to prevent skidding.

You can give them what they want in Giant Grips. Drivers can easily and quickly apply them on the coldest days and in the worst weather. They do the work and make good every time. The market for Giant Grips is tremendous. Now is the very best time to sell them. The worst of winter is yet to come. Put in a stock immediately, hang our forceful poster in your window, and you'll be surprised at the volume of business you will do when winter's storm and sleet sets in in earnest. 'Phone, write or wire your jobber today and be ready to supply truck owners when bad weather drives them in your place.

Challoner Co., 2700-2900 Osceola St., Oshkosh, Wis.

Giant Grip Non-Skid Chains For Motor Grucks

When Writing, Please Say-"Saw Your Ad. in the CCJ"



BADGER Truck Jacks are as big as the job they're put to. Handle heavy loads without unloading. Sturdy. Simple. Powerful. Practically unbreakable. Factorytested to stand more than the strain of actual service. Branded with lifting capacity—and guaranteed to raise the rated load—a new jack free if they can't. Short, vertical handle stroke. Greatest leverage with least effort. All working parts are accurately fitted. Pawls of best grade, dropforged steel. Lock automatically—and stay locked as long as you like.

Built to sell at a price that *permits* use of highest quality of materials and workmanship—insuring the service we guarantee—and users want.

They win trade for dealers—and are appreciated by buyers of trucks with which they come as standard equipment. Write for catalog, listing 12 members of the Badger Family—

"A Jack for Every Job"

WALKER MFG. COMPANY
RACINE, WISCONSIN

## BADGER TRUCK JACKS

## BESSEMER

### TRANSPORTATION

NE big fact is now rapidly crystallizing in the great American consciousness. It is that our present social and commercial distress is not due to lack of supply—that is abundant. It is due to lack of transportation facilities. In response to Federal appeal the farmers have increased their crops and the manufacturers their output, but the distribution system has barely held its own—and it was not adequate before. Careful thinkers have long realized that in some way the railroads must be supplemented. The theorist has advanced many fanciful ideas, but nothing useful. Now that the crisis has been reached we find that, as usual, the practical man of affairs is rapidly solving the interurban distribution problem by applying the motor truck, already perfected for city hauling. In the not distant future, thousands of these great highway locomotives will be carrying the excess American production, operating in a field which, owing to their limitations, the railroads cannot reach. The business of building and distributing these new carriers will be enormous. The immediate demands of 1918 will tax the resources of the truck manufacturers to the limit. Every citizen will be affected indirectly; are you sure that you will not be directly congestion going to affect you next month?—next summer?—next winter?

And, Mr. Dealer, have you added trucks to your line? The Bessemer has built-in all the strength and endurance of steel that the name implies and is an old conservative line dating back to 1910. And those old chain drives are still going. Every year has seen tested improvements added, and so by a gradual refinement, we have produced the 1918 Bessemer. It is these years of experience that have provided the right amount of reserve power and ample strength where needed, that guarantee unlabored performance.

In addition to this, the Bessemer knows how to cooperate with the dealer to get results. It is easy and interesting work to sell Bessemer Trucks with Bessemer Ammunition. You owe it to yourself to hold your thumb on this page until you can get a card addressed to us.

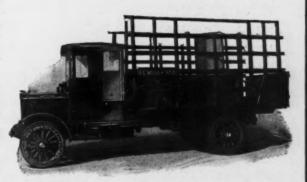
Model G—1-ton S1250 Model D—2-ton \$2550 Internal-gear drive

Model J—2-ton \$2200 Model E—3½-ton \$3450 Internal-gear drive

Bessemer Truck Co., Buffalo, N. Y. Western N. Y. Distributors







Metropolitan Motor Truck Co., Minneapolis, Minn. Middle Northwest Distributors

Bessemer Motor Truck Co. Sales Promotion Dept. Grove City, Pa.



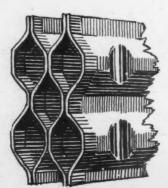
### A Perfect Cooler for

TRUCK and tractor makers are offered in the Spery Radiator a cooling system that is far in advance of any now on the market. It is the development of an entirely new idea which overcomes the drawbacks of both the honeycomb and tubular types of construction and yet incorporates the merits and advantages of each.

The Spery, from the front, looks like a conventional honey-comb radiator, which is conceded to be the best looking type. But a close examination reveals a radical difference in construction. A cross section, for instance, shows ample zigzag canals which give many more points of heat contact than does the honeycomb type.

Another enlightening view is from the top. This gives the effect of looking through numerous vertical tubes. These tubes are pressed into the zigzag water-walls and become a part of them. Thus you get a construction that combines the merits of both the honeycomb and tubular types.





The tubular type does not clog while the honeycomb does. The Spery cannot clog.

The honeycomb has considerably more radiation surface than the tubular. The Spery has more than either.

The honeycomb does not freeze as easily as the tubular. It is practically impossible for the Spery to freeze.

The tubular has greater rigidity than the honeycomb.

Hooven Radiator Company

# RADIATOR Trucks and Tractors

The Spery is even more rigid, the vertical tubes being braced at every point by the strong, zigzag construction.

The tubular is more easily repaired than the honeycomb. The simple, practical Spery construction makes it more easy and inexpensive to repair.

### In addition to the foregoing are these very important features:

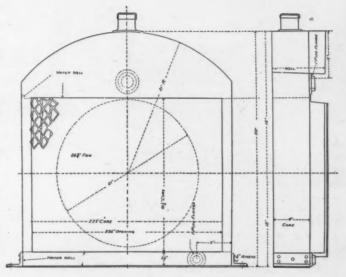
The Spery carries from 35% to 40% more water than either of the other types.

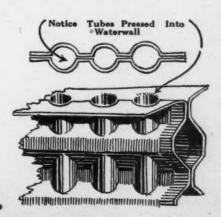
It keeps the engine cool constantly at the point of highest efficiency.

It will not leak and is practically unbreakable.

Its construction gives a strength and durability not found in any other type.

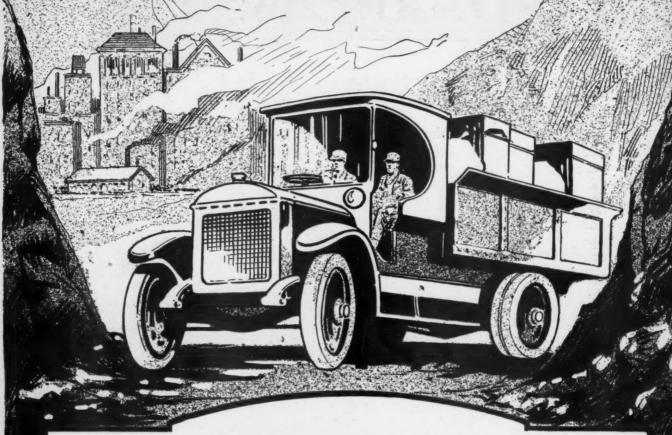
These are points of vital importance to makers of trucks and tractors. The hard usage which such motor vehicles must endure, the severe service they must continually stand and the bad reputation resulting from inefficient cooling make it highly advisable that the very best cooling be employed. We can prove to your complete satisfaction that the Spery Radiator will give results such as cannot be obtained from any other system. If you are looking for the best, you'll ask us to prove that statement—and we will.





417 Dearborn St., Chicago, Ill.

### MOST MILES FROM FUEL FEWER TRUCK TROUBLES



Miles-Minutes-Tonnage-those are the things that make you a profit or cost you a loss. With a

### **New Stromberg Carburetor for Trucks**

—on your truck—you'll find all three on the right side of your ledger. You get most mileage—because it gives most perfect fuel mixture. You have fewer troubles—because of simplicity of carburetor construction,

You handle greatest tonnage because it enables trucks to cover most ground and carry heaviest loads. Proof of this has put the New Stromberg on a 41% of all listed Truck Models.

Write today—NOW—for Stromberg Records—Descriptive Matter—evidence of extreme economy—and Money-Back Trial Offer

Stromberg Motor Devices Co. Dept. 336 64 E. 25th St., Chicago, Ill.

New STROMBERG Does it!

When Writing, Please Say-"Saw Your Ad. in the CCJ"



When Writing, Please Say-"Saw Your Ad. in the CCJ"



### Pertinent Reasons for Using Clark Steel Wheels

Clark Steel Wheels are superior to all others in various particulars. Here are a few of them:

Patented March 16, 1915
Originators and Designers of Double-Disc Pressed-Steel
Wheels and Cast-Steel Disc Wheels for Motor Vehicles.

Their construction makes them the strongest wheels.

They are lighter in weight.

Strain is evenly distributed.

Are much easier on tires.

Reduce cost of operation.

Are neater, cleaner, easier painted.

Not affected by the climate.

Faster, because lighter at the rim.

Absolutely true, can't wabble, squeak or rattle.

One-piece—no parts to lose.

Come complete, ready for tires and bearings. Adaptable to any form of drive.

Accurately machined and absolutely interchangeable.

Have no internal strains.

Made of electric furnace steel in the most modern steel-casting plant.

Give greater value and better service.

These are surely good enough reasons to justify their use on your trucks. Investigate.

Clark Equipment Co., Buchanan, Mich.



### Easy to Operate, Lubricate and Adjust

Here are important factors which are not always given the consideration they deserve:

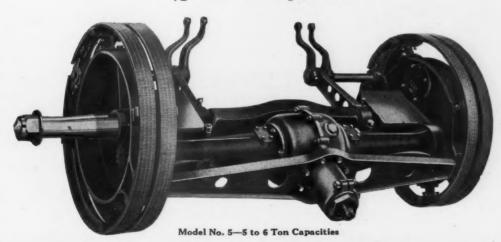
The Clark Internal-Gear Drive Axle-equipped truck is easy to operate. It requires no expert to drive it or to look after it, and the average driver gets splendid service from the truck without the slightest difficulty. This is an important point when skilled men are so difficult to secure and demand such high wages.

The Clark Axles are also easy to lubricate and the lack of proper lubrication is not detrimental to them. This is a valuable feature as most drivers fail to give their trucks proper lubrication. With some drives, this results disastrously, but not when the Clark Unit is used.

Furthermore, the Clark Axle requires practically no adjustment, and what little may be needed can readily be made by the driver. This is quite a contrast to some other drives, which are so intricate as to require expert or factory adjustment. This means an expense and loss of time that is absent when the Clark Axle is used.

All three of these points make quite a showing on cost sheets. It is to your advantage to use Clark Axles and keep these items down to the minimum.

Clark Internal-Gear Drive Axles are made in ½ to 6 ton capacities



Clark Equipment Co., Buchanan, Mich.

## ONE-TON TRUCK ATTACHMENT FOR FORDS

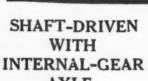
NOT AN ASSEMBLED PROPOSITION

EVERYTHING BUILT IN OUR OWN FACTORY

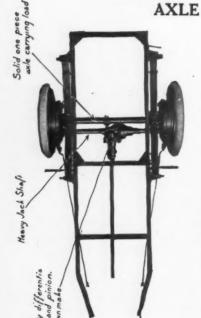


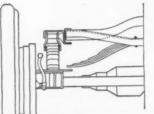
THIS IS WHY
WE CAN
MAKE
DELIVERIES
AND ASSURE
YOU PROMPT
SERVICE IN
PARTS

THE PLANT BEHIND THE TRUCK









\$360

F.O.B. NEWARK, OHIO

NOTE the Auxiliary Spring Construction on the Jewett, which means many added years of service.

IT IS FIRST—FOREMOST STRONGEST—STURDIEST BEST THAT MONEY CAN BUY

WRITE OR WIRE FOR YOUR AGENCY TODAY

DEALERS:-Here is Your Chance to Clean Up

THE JEWETT TRUCK ATTACHMENT COMPANY
NEWARK, OHIO

## THE CURE

For Engines With These Symptoms
CARBON WEAR

Collection of carbon, not allowing valves to seat; also in combustion chamber, causing pre-ignition, loss of power, and a hot engine.

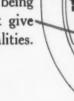
Fouled spark plugs cause skipping. Gasoline leaks into cylinder cutting lubricating qualities of oil, causes excessive wear.

Oil turns black from being burned, and does not give correct lubricating qualities. Cylinders larger at the top

Compression and hot gases escape, burning oil, destroying life of piston rings and engine.

Excessive gasoline and oil consumed. Bearings do not stand up.

Dry and pin-scored cylinders are results.





Regrinding the Cylinders, Fitting New Pistons, Rings and Pins



Your Protection

Standardized Work and Prices

1130 EAST GEORGIA STREET

We have 600 different make and size patterns; are the largest exclusive Cylinder Regrinding and Oversize Piston and Pin shop in the Middle West.

All cylinders are ground on Brown & Sharpe or Heald cylinder grinders.

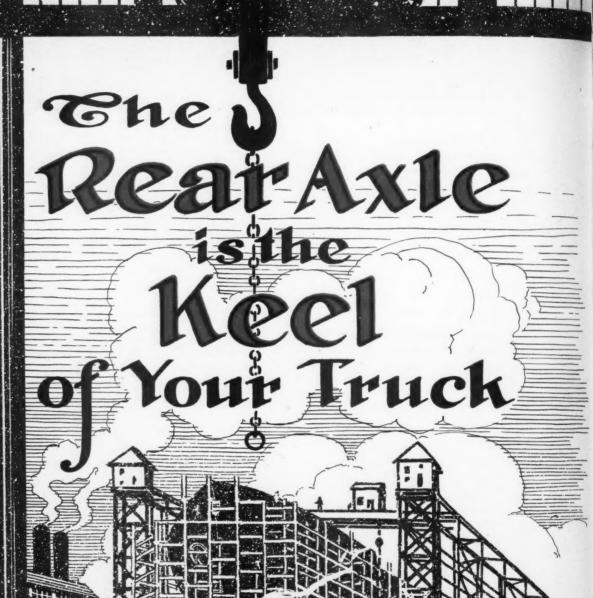
The pistons are of standard cast or light-weight, semi-cast iron, made from our special patterns of superior piston iron and finished to our standard practice, which conforms to S. A. E. standards. All pistons are ground to size and fitted to each individual cylinder.

The single-piece ring we use has even wall tension and long life.

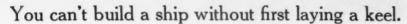
The piston pins are made from steel tubing, heat-treated by special methods, which produce great hardness and toughness.

Our twenty-one years of practical engineering gives our customers the perfection of this service in the automobile industry.

Truck Builders, Sales Agencies and Service Stations, Repairmen and Owners should learn our policy and prices.



When Writing, Please Say-"Saw Your Ad. in the CCJ"



The country recently had a forceful demonstration of this, when an ambitious ship-building program was held up because the keels were not ready to be laid. Though there was an abundance of other materials ready, no progress could be made, because the timber from which the keels were to be hewn was still growing in the Oregon forests.

As the keel is the chief timber and the very foundation of a vessel, so is the rear axle to the truck.

You can build a thoroughly dependable and satisfactory truck only after laying the keel, which is your rear axle. Many truck makers who were building from the front back (and, thereby, neglecting the rear) have learned this to their sorrow. The right way to build is to first lay the keel and build from the ground up. The best keel you can lay is found in

## SHELDONAILES

Sheldon Axles cost more than other axles, but their value is so much greater that the additional first cost shrinks into insignificance when compared with the ultimate saving effected by their use.

Wise makers have found it pays to spend more for Sheldon Axles. By so doing they eliminate axle trouble, reduce expense, have greater operating efficiency and longer-lived trucks.

The trucks that are built around Sheldon Axles are better trucks, because the foundation is better, and because the maker who willingly pays more for Sheldon Axles will likewise spend more on other parts, so that he might have the very best obtainable.

Start building right by laying Sheldon Axles as the keel of your trucks.

### Sheldon Axle & Spring Company, Wilkes-Barre, Pa.

CHICAGO: 122 South Michigan Ave. DETROIT: 808 Kresge Bldg. SAN FRANCISCO: 41 Spear St.



## AUTO TRUCK

There's an Auto Truck



Model A 2, Standard Platform Body with double Le acting tailgate—removable wood side boards



Model A-Standard Body



Model A. Standard Body

RUCK manufacturers and dealers who want high-grade steel bodies at a moderate price should get in touch with us. We can satisfy them, because first-hand contact with hauling problems of every description has made it possible for our engineers to design a type for virtually every business need. And quality is apace with utility. The service our bodies are delivering on thousands of motor trucks all over the nation emphasize their high-grade capabilities. The Model A shown below is our Standard Body and the one having the greatest sale. However, we make just the size, type or character of body you require and with any desired attachments.

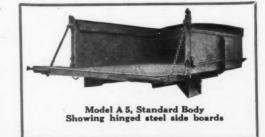


Model A, Standard Body with double-acting tailgate and mudguards



Model A, Standard Body with removable steel side boards





Auto Truck Steel Body Co.

H. R. Dailey, President

## STEEL BODIES

**Body for Every Business** 



Model A-Standard Body, with removable partitions and chutes

ROMPT deliveries is another important link in the Auto Truck Steel Body chain of service. Making nothing else but steel bodies and having great facilities, we can promptly handle any order for a large quantity of one type or a limited special order. At all times we carry a stock of from 25 to 75 standard bodies ranging from 2 to 6 yards capacity and can so fill such orders immediately. If you need steel bodies, the one commonsense thing to do is to communicate with us at once. In case we have no standard type to meet your requirements, our special body department will build to your specifications, giving you bodies of superior construction, correctly priced and promptly delivered. May we send you literature, photos, prices and other data pertaining to efficient and practical steel bodies?



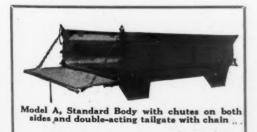
Model A 4, Standard Body



Model A 3, Standard Platform Body Showing steel boards and stake pockets



Model A 3, Standard Platform Body with double-acting tailgate, removable steel side boards, 2 radius at bottom of square if preferred







3028-46 Carroll Ave., Chicago, Ill.



### The Symbol of Highest Quality

ON BRAKE LININGS:
PACKINGS: ASBESTOS
TEXTILES: MADE BY
THE LARGEST MANUFACTURERS of ASBESTOS
TEXTILE PRODUCTS IN
THE WORLD



### GENERAL ASBESTOS & RUBBER CO. CHARLESTON S. C.

Branches and complete stock—58 Warren St., New York City 311 Water St., Pittsburgh 106 W. Lake St., Chicago

### ADERDATION OF STATE OF THE OWNER OWN

## ONE DA

Instead of a few months, years were spent in planning and designing Oneida Trucks.

ONEIDA

Merely a good truck wouldn't do—the Oneida had to be a great achievement—a master truck.

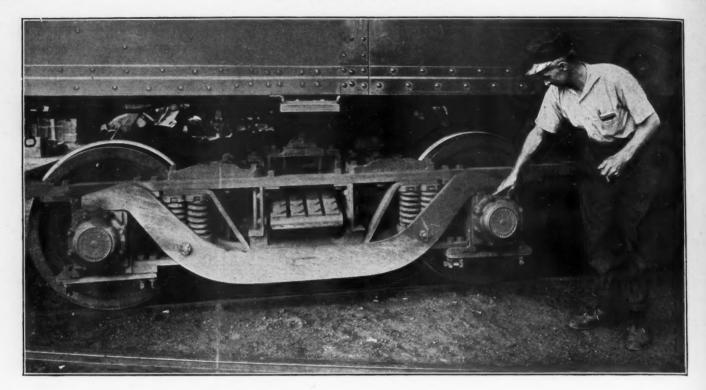
And it is.

Standard units of known value are used in its construction and these, perfectly co-ordinated with the practical exclusive features and many refinements of the Oneida, give it unquestioned leadership in the field.

If you appreciate the sales-value of *quick deliveries*, find out at once if the Oneida is represented in your territory. Write or wire.



## TRUCKS



### They don't get hot

Whether they are on the motors or main journals of electric cars, on the main spindles of heavy lathes, on the gears driving five-inch drills, or on high-speed grinders, Gurney Ball Bearings don't get hot.

By reducing friction to a minimum Gurney Bearings not only save power, but they also eliminate "hot boxes," with all their trouble, delay and expense.

Our Engineers will be glad to show how ball bearings will solve your bearing problems. Allowing them to make recommendations places you under no obligation, and all data you send will be considered confidential.

### **Gurney Ball Bearing Company**

Conrad Patent Licensee

Jamestown, N. Y.

257

## GURNEY

When Writing, Please Say-"Saw Your Ad. in the CCJ"



### **Electrically Trucked Bricks**

First Mr. M. J. Kelly, General Manager of the Brooklyn Fire Brick Works, bought a five-ton G. V. which did such good work that sixty days later he ordered another.

This is the story of the G. V. Electric 97% of the time. It may take years to sell a man the *electric principle* of trucking, but once the G. V. gets the chance to demonstrate its efficiency as compared with horse trucks and city-operated gas trucks, there is but one result — more Electrics!

What is true of bricks is true of 150 other lines of business. Notice the initial installations made by the General Vehicle Company each year. The impression, prevalent at one time, that Electrics are bought only by brewers and express companies is now voiced only by the "knocker." Ask our nine hundred users.

As a matter of interest, we now have three customers, one of them an immense corporation, who use G. V. Electrics to haul gasoline. Are you still from Missouri when it comes to city trucking?

Why not write for catalogue 84 and a list of G. V. users in your line of business?



General Vehicle Company, Inc.

General Office and Factory - - Long Island City, New York





When Writing, Please Say-"Saw Your Ad. in the CCJ"



Four-Wheel, Reversible

2-4-6 Ton Standard Capacity

1-3-5 Ton Special to Order



The name

The

stands for

#### During the Past Winter

added manufacturing facilities have increased output of trailer department to 1,000 four-wheel. reversible trailers per annum, or its equivalent.

Many new body types added.

New garbage handling vehicles.

### LEADERSHIP

in the design and manufacture of motor truck auxiliary equipment. "Devices which make motor truck operation pay." The

### EE INE

includes:

Trailers Semi-Trailers Pole Trailers Automatic Dump Bodies Loading Equipment Hoists, etc., etc.

### EE OADER & BODY

**ENGINEERS AND MANUFACTURERS** 

2343-2350 So. La Salle Street

Chicago, U.S.A.

"The homogeneity of Non-Gran Bronze bushings, their freedom from flaws and hidden defects, and their uniformity have made them almost indispensable to our service."

THAT is the written word of the chief engineer of one of the largest of America's aircraft manufacturers. He made it because impelled by patriotism. And he spoke from seasoned experience.



American Bronze Corporation Berwyn Pennsylvania

# CHILTON TRACTOR JOURNAL

## ANNOUNCEMENT

Commencing

### JUNE 25th

We Will Issue a New Monthly Publication Called the

## Chilton Tractor Journal

The cover of which is here reproduced

This publication will be devoted exclusively to the interests of the tractor trade. Full particulars on the following pages.

### CHILTON TRACTOR JOURNAL

### What it will be-

The CHILTON TRACTOR JOURNAL will be a publication devoted exclusively to the interests of the tractor trade.

It will be the only exclusive tractor trade paper in the field—filling a place that the trade concedes is vital to the success of the industry.

It will be a high-grade publication throughout—the same size as the COMMERCIAL CAR JOURNAL and printed on the same quality of paper.

It will be a publication edited by men who have been brought up in the tractor and implement industry, who will devote their entire time, in conjunction with the regular Chilton Editorial Staff, to making the CHILTON TRACTOR JOURNAL the finest publication, editorially and typographically, it is possible to produce.

### What it will contain—

The CHILTON TRACTOR JOURNAL will be brimful of matter that is interesting to the trade.

It will contain descriptions and illustrations of new tractors, parts and accessories.

It will contain treatises on plowing, hitches, implements and other features peculiar to the tractor field.

It will contain articles dealing with the tractor dealer's problems and which will help him market his tractors to the best advantage.

It will contain special articles of broad interest to the whole industry on subjects pertaining to its growth and development.

It will contain valuable pointers on design, construction, repairs, shop work and other mechanical subjects.

It will contain news of the field and those connected with it, bringing all factors into intimate touch with each other.

It will contain just the kind of information the tractor industry needs for its advancement.

### CHILTON TRACTOR JOURNAL

What it will do-

The CHILTON TRACTOR JOURNAL will reach tractor manufacturers and dealers, makers of tractor parts and accessories, jobbers, wholesalers, dealers and agents in same.

It will cover the tractor field as no other publication now does.

It will afford makers of anything pertaining to tractors the opportunity to get in touch with the quantity buyers of the industry in the quickest, most thorough and economical manner.

The CHILTON TRACTOR JOURNAL will be issued on the 25th of each month, bearing the date of the first of the following month.

During the past two years the CHILTON COMPANY has assembled in its editorial and advertising departments a force of men who are thoroughly acquainted with the tractor and implement fields—men who, by reason of their knowledge and acquaintanceship with the problems of the industry, are competent to intelligently advise the trade on the best means of obtaining distribution and building up the industry.

In addition to this the CHILTON COMPANY has expended considerable capital and much time on the part of able investigators to obtain first-hand information about the tractor situation, so it will be in a position to make the CHILTON TRACTOR JOURNAL the highest authority of the industry.

Advertising in such a medium is sure to bring you into contact with quantity buyers of everything that enters into the making, maintenance and operation of tractors.

The surest way to establish yourself in the tractor field is to advertise in the CHILTON TRACTOR JOURNAL.

## Chilton Tractor Journal

IS THE FIFTH AND LATEST OF THE

### Chilton Company Publications

THE OTHERS ARE

AUTOMOBILE TRADE JOURNAL COMMERCIAL CAR JOURNAL CHILTON AUTOMOBILE DIRECTORY CHILTON TRACTOR INDEX

The CHILTON TRACTOR JOURNAL will be maintained on the same high standard as these other CHILTON publications and is destined to occupy a similar leadership in its field.

Information, circulation statements and rates furnished upon request.

To advertise in the CHILTON publications is to start on the road to success.

CHILTON Market and 49th Streets COMPANY Philadelphia, Pa.



### **Prompt Deliveries**

I N extending Winther trade connections, we desire only those dealers who measure up to Winther standards.

Winther Internal-Gear Drive Trucks have, since their introduction a year ago, taken rank as unquestionably the foremost quality truck produced in America. The trade connections we have established throughout the country, now extending from coast to coast, are of the same high rank. It means something to be a Winther dealer.

Among other things, it means that we, on our part, assume certain obligations to you as a dealer. For instance, we assure you of prompt deliveries. This is of importance, with conditions as they now are. We assume trade connections only in proportion to the number of trucks we can deliver. We expect to keep our

promise to you, so that you may keep your promises to your customers.

We back you with a full line of trucks—one ton to seven—all of one standard—the highest, all based on the fundamental Winther design developed as the result of the American military expedition into Mexico. A Winther dealer needs no stop-gaps—he need apologize for no trucks of lesser worth, nor burden himself with costly service on less efficient trucks "taken on" to fill a line.

To dealers who can measure up to Winther standards, we shall be glad to send the further facts concerning Winther Trucks, Winther selling plans, Winther co-operative service and inspection, and details of the great Winther advertising campaign, which, in 1918, will reach 20,000,000 readers, practically every possible motor truck buyer in the United States.

Model 28—Maximum capacity 1 ton Model 48—Maximum capacity 2 tons Model 68—Maximum capacity 3 tons Model 88—Maximum capacity 4 tons Model 108—Maximum capacity 5 tons

Model 108—Maximum capacity 5 tons Model 128—Maximum capacity 6 tons Model 148—Maximum capacity 7 tons

WINTHER MOTOR TRUCK COMPANY
Winthrop Harbor Dept. A Illinois



## Opportunity has a hot foot and a crick in her neck

She can't look 'round and won't turn back for the man who misses his date with a big chance. From confidential sources we learn that she's headed your way with the best proposition of the year—the Maxwell truck. Dealers who have sold several thousand Maxwells since August of this year have a very convincing bunch of balance sheets, and retailers, manufacturers and producers in scores of different fields are ready to furnish further evidence that there's more money to be made in a hurry and without a worry through a Maxwell truck agency than any equal investment of time and a little capital has yielded in a coon's age. Somebody in your town is going to profit handsomely through the smashing advertising campaign soon scheduled to break: in words of the well-known song "It might as well be you." (Set the alarm clock early, see your banker and get busy.)

MAXWELL MOTOR COMPANY, Inc., DETROIT, MICH.





### A Dependable Source of Supply for the Automotive Industries

A company is known by the customers it keeps.

The great majority of representative manufacturers of motor cars, motor trucks and other finished products of the automotive industries are our steady patrons.

All the resources of an extensive and efficient organization, including: Large Manufacturing capacity Well grounded engineering

Thorough laboratory work Ample capital and

The economies of large buying power Advantages of expert traffic management

Pleasant sales relations, and

Both length and breadth of experience, are placed at their disposal. Standard Parts products have contributed to the growth of many manufacturing enterprises. Similarly,

these have contributed to the growth

of the Standard Parts Company.

The same resources, the same efficiency and service are offered to all alike.

Our vast operations and the strategic location of our numerous factories merit the producer's confidence in our institution as a dependable, economical, efficient source of supply.

#### Standard Parts for Motor Cars, Trucks and Other Vehicles The Famous Stanweld Products-Including:

Axles Axles (dead rear)

Axles, trailer Bock Bearings Hubs

Perfection Springs (regular and thin leaf) types Perfection Heaters Rim tools

Rims-clincher, detachable and demountable for single and dual equipment Clincher rims
Detachable rims for Wire Wheels, special
Millimeter rims, all types

Flanges and Fittings Solid Tire Demount-able Equipment Tire Bases in Demount-able and Pressed on Channels Brake Rod Assemblies, complete

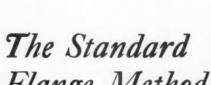
complete Starting Cranks Electric Welding of

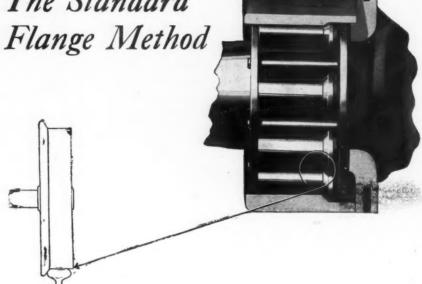
Parts
Exhaust Tubes
Forgings for Convertibe Trucks
Bands S. A. E.
Formed Tubing
Ignition Wiring Tubes
Lamp Brackets
Mast Sleeves
Oil Tubes

Radiator Rods
Starting Gear Rings and
Boxes
Straight Steel Tubing
Steering Gear Tubing
Tail Pipes
Torsion Tubes
Truss Rods
Tub in g (straight and
formed)

We also manufacture parts for Airplanes Tractors, Motorcycles, Bicycles, Fire Arms, Carriages, Wagons and other vehicles

The Standard Parts Company, Executive Offices, Cleveland, Ohio





The same flange principle that is embodied in the construction of the flanged car wheel is also found in Bower Bearings.

It is the flange on the wheel that holds the big 200-ton locomotives on the track and guides them around curves. Also in Bower Bearings the flanged head on the rollers guides them and resists end-thrust.

ROLLER BEARING CO.
Detroit Michigan



You can have anything you want—but you must decide NOW. The war period has given business a tremendous stimulus. The calmest judges of affairs in the country predict an after-the-war trade that will stagger even the optimists. And every man who thinks knows

that it is true.

The world's present facilities for transportation are totally inadequate for the new job. American business men turn hopefully to the MOTOR TRUCK for the solution. The demand for motor trucks today is enormous. A year hence it will be infinitely greater.

You can get a large share of this business in your locality selling D-E Worm-Drive trucks—larger than you could with any other, for this reason:

D-E trucks are the best built, most powerful and the greatest values in Worm-Drive Trucks at their prices in America today. They have all the worth-while features of construction of trucks coting hundreds of dollars more—and a correling constitute that is remarked. dollars more—and a carrying capacity that is remarkable. Write or wire for detailed specifications and dealer proposition and lay your foundation NOW for a period of record-breaking prosperity.

MODEL J Chassis Carrying Capacity Including Weight of Body 2250 Pounds

\$950

MODEL A

Chassis Carrying Capacity Including Weight of Body 3500 Pounds

\$1495

MODEL B

Chassis Carrying Capacity Including Weight of Body 4500 Pounds

\$1755

MODEL C

Chassis Carrying
Capacity Including
Weight of Body

Chassis Carrying
Capacity Including
Weight of Body 7000 Pounds

\$2365

MODEL D

5500 Pounds

\$1835

MODEL E

Chassis Carrying Capacity Including Weight of Body 14000 Pounds

\$4300

#### DAY-ELDER MOTORS CORPORATION

General Sales Offices, 1455 Broadway, New York City, P. K. Hexter, General Sales Manager Factory, Newark, New Jersey, U. S. A.





## Profitable Motor Trucks for Dealer and Owner

We offer the 1918 line of International Motor Trucks as a most profitable dealer opportunity. Your biggest selling year is just ahead and these are the trucks with the steadiest popular and growing demand.

Concerns which make careful economy tests as a matter of good business, and which buy *economical transportation*, regardless of price, are standardizing on Internationals. One such concern has in service over 600 International Motor Trucks and is adding to this fleet regularly.

In every business, from truck gardening to manufacturing, wherever you find an International Motor Truck, you will find an owner who will bring out some phase of the "built-to-last" quality. Some marvel at the economy of the International engine; others at the efficiency of the International axle. Whatever the owner's story may be, proof is provided over and over again that International Motor Trucks are built with exacting care by an organization that has gained a world-wide reputation for the service it gives to its customers.

International Motor Trucks meet the needs of any and every firm with transportation problems to solve; in 1500, 2000, 3000 and 4000-pound capacity sizes, at prices ranging from \$1450 to \$2550 for the chassis (cash f.o.b. factory), with suitable bodies for every business.

You know International standards and reputation—but have you seen the new 2-ton Model G?

The time is ripe for easy, profitable, thoroughly satisfactory selling. Your territory may still be open. If it is, get an International contract.

Write today for full information

#### International Harvester Company of America

(Incorporated)

182 Harvester Building

Chicago USA

## Maxim Silencer

Geuder, Paeschke & Frey Manufacturing Facilities Now Make This Nationally Known Product Available FOR YOUR 1918 CAR!

"Maxim" is a name that will help sell your machines, for it is internationally famous, and known to every car buyer. Back of the mere name is the scientifically exact performance of the device itself, adding the final touch of silent running to the modern automobile.

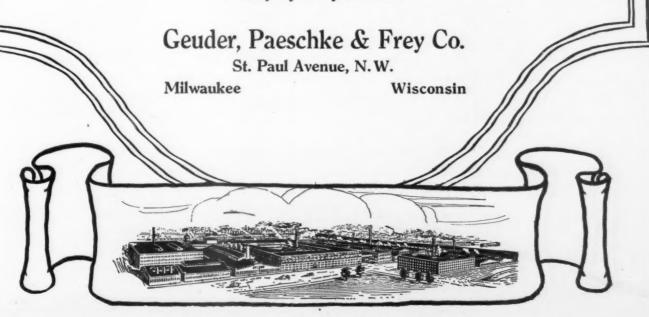
#### IS TRIPLY ECONOMICAL

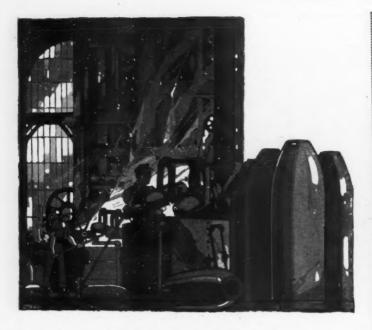
First, because it is made in quantities in our capable parts plant; second, its freedom from back pressure allows the engine to work to the full; third, its reputation and performance shorten the selling task.

#### READY FOR YOU

We are making Maxim Reinforced Non-Burst Silencers in quantities, in all types for all truck and passenger car engines, at attractive prices.

Write for full information





Going to Make Munitions?

## **OAKITE CLEANS**

High Explosive Shells and Shrapnel, Time and Percussion fuse parts, Rifles and Machine Guns, Cannon and Armor Plate, Torpedoes and Mines.

#### Munitions or Automobiles

OAKITE Materials and Methods are speeding up production and cutting down costs—saving labor and minimizing danger.

Whether you are making munitions or automobiles, a line to our Service Department will put at your disposal information and service which will be invaluable to you. Write for it!

#### THIRTY DAY TRIAL OFFER

Write for details of our offer to send a barrel of OAKITE on thirty days' trial subject to the terms of our Positive Guarantee

#### OAKLEY CHEMICAL CO.

38 Thames Street

**New York City** 

## Efficiency

Efficiency is a wartime word. It applies to factory management. It applies to any business department. It applies to the purchase of advertising, the selection of the medium.

Don't depend on the **second** or **third** medium when you can use the **FIRST**, at a better buy.

## COMMERCIAL CAR JOURNAL

First in Editorial Interest.

First in Number of Advertisers.

First in Amount of Business.

First in Amount of Paid Circulation.

First in the Audit Bureau of Circulations.



## Berlingized trucks defy the spring floods

Because the Berling Magneto is water-proof—

That's the virtue that has made it conquer the marine-motor field—

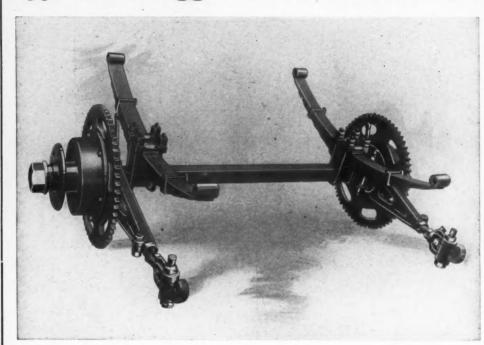
That's only one of the virtues that has made its progress in the motor-truck field' faster and surer than any other magneto.

Ericsson Manufacturing Company Military Rd. Buffalo, N. Y.



Berling Magneto
WORTH MORE DOES TO MORE

#### Type 1900 Liggett Dead Rear Axle for Form-a-Trucks



Manufacturers of formatrucks will find in the Type 1900 Liggett Dead Rear Axle a satisfactory solution of the most important item in converter attachment building, Reasonably prompt deliveries can be made.

#### Description

Axle Bed—One-piece steel forging, 21/4" square, heat-treated.

Spring Seats—Eberhard type for 2", 21/4" or 21/2" spring, maximum spring centers, 381/2".

Bearings-Bower Roller.

Hubs and Brake Drums—One-piece solid castings for 1¾" or 2" spokes. Brakes, internal expanding.

Radius Rods-Swivel Type.

Sprockets—For 3/8 x 5/8, 1" pitch chain. Standard number of teeth, 63.

Double Chain Drive.

Write for full information

Liggett Spring and Axle Company :: Monongahela, Penna.

Direct factory representatives, AMERICAN DISTRIBUTING COMPANY, Kresge Building, Detroit



### Latest Type Wood Hydraulic Hoist

We are the original builders of this most successful of all the lifting devices.

We are now supplying a very large percentage of the best truck builders in the country.

If you are not one of them, order one, and compare it with what you are using.

Built in two sizes to fit any chassis.



Prices and particulars furnished on request by the

#### Hydraulic Hoist Mfg. Company

172 W. 5th Street SAINT PAUL

#### COLUMBIA Dealers Get the Business!

Four big, dominating factors get business for Columbia dealers. The paramount qualities that make the Columbia agency a real business-getter and profit-winner are sturdiness, power, simplicity and honesty of value. The thorough goodness of the Columbia Truck is directly responsible for the ever increasing demand. We are so sure of their ability to stand up and deliver under all conditions that we back them

with our positive guarantee for one year. The brief specifications below will give you an idea of Columbia Character, and prove to you why the Columbia is the greatest value ever offered and the best connection a dealer could make.

Write today or wire at once and get our proposition on Columbia Trucks and Trailers. They will get business for you.

\$1990 2 Tons Continental Motor

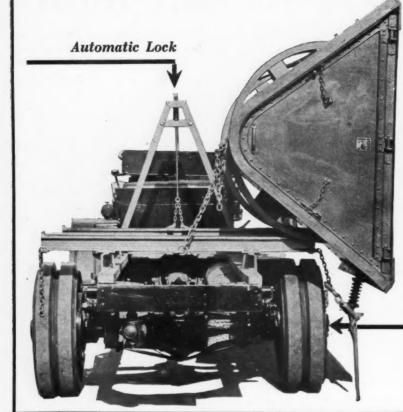
Russel Internal-Gear Covert Transmission Long Radiator Hayes Wheels Schuler Front Axle Perfection Springs Spicer Universals "Dixie" Magneto Pierce Governor



Columbia Motor Truck and Trailer Company

Pontiac, Michigan

#### Side Dump Bodies for Motor Trucks and Trailers



No Power Required to Operate

Patented May 2, 1916, and November 6, 1917

Cut shows three-yard body with tailgate attached at top, and retaining chains lengthened so body will remain in dumped position. Upon a slight lift by operator, body returns to upright position, where it is caught and held by automatic lock.

Hopper can be rolled or lifted from vehicle, leaving rigid, steel crosstracks to receive lumber, steel or interchangeable platform body for package freight.

Note Wheel Clearance

Winsor Gravity Dump Body Co.

715 Majestic Bldg.

Detroit, Mich.



The Home of CHILTON Publications

#### Chilton Automobile Trade Service

at \$3,000 Annually

is enabling hundreds of experienced automobile advertisers to realize handsomely on their investment.

The Service includes a full page for a year in the three CHILTON publications: AUTOMOBILE TRADE JOURNAL, CHILTON AUTOMOBILE DIRECTORY and COMMERCIAL CAR JOURNAL, together with the free use of the CHILTON TRADE LIST.

Each of these publications is the leader in its respective field, with a large and influential circulation of a result-producing character. By concentrating your efforts in these mediums you thoroughly blanket the industry at a small cost.

Let us give you full particulars

Chilton Company, Publishers, Market and Forty-Ninth Streets, Philadelphia

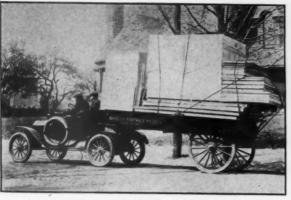
#### Can't a Horse Pull More Than He Can Carry? Can't a Locomotive Engine, a Tugboat and an Automobile?

With a Martin Semi-Trailer a Ford can Easily Pull a Ton Without the Least Strain on the Driving Mechanism

(The reason why this is possible is fully explained in a circular which will be sent on request.)

Dealers: Write for discounts





#### **ONLY \$225.00 Complete**

The Only Trailer That is 100% Efficient, Because:

The Only Trailer That is 100% Efficient, Because:

It can be backed, turned and handled with ease in the narrowest quarters. (Unless a trailer can be backed and manipulated in freight yards and narrow spaces it is far from being 100% efficient.)

It allows sufficient weight for traction. (Unless there is enough weight for the driving wheels for traction they will slip on the wet asphalt, ice and snow. With the Martin Semi-Trailer enough weight is carried on the driving wheels for traction.)

The Ford and Semi-Trailer combination make a unit, and is permitted on all streets and ferries. (Some cities have legislated against the use of four-wheel trailers, but in no case does this adverse legislation apply to the semi-trailer.)

The Martin Semi-Trailer was designed by automobile engineers. It is high grade in material and construction and can easily carry a ton. A Ford used as a tractor can easily draw a ton. The Rocking Fifth Wheel connects with the Semi-Trailer Ford Roadster. The connection can be made and unmade instantly. It enables the Ford to be used either as a commercial vehicle or as a pleasure car at will, since the Ford is not mutiliated in any way.

Martin Rocking Fifth Wheel Co.

Springfield, Mass.

#### FifthWheels and Semi-Trailer Rear-Ends Up to Ten-Ton Capacity.

The Martin Semi-Trailer and Ford Combination make the lowest priced one-ton truck in the entire commercial car field. It is very little longer, over all, than the conventional truck of the same loading







## You Can Sell Warner Trailers To Every Commercial Car User

Your market for Warner Trailers is assured. We furnish you with sales data, covering all lines of business. Our plan makes easy sales for you.

#### A Trailer for Every Hauling Need

Mark that the Warner line includes a size and type for every business. You are not confined to one class alone.

Two-wheel, four-wheel, big, Heavy-Duty Trailers; Light, Commercial Delivery jobs; Regular or Special bodies, interchangeable beds—could a wider field be covered.

#### Many Exclusive Features-Performance Guaranteed

Warner Trailers incorporate numerous patented features. All practical advantages that users readily appreciate—the strongest possible selling points.

Mr. A. P. Warner of Warner Auto-Meter fame stands back of every Warner Trailer. His name is one of the best known in the whole automobile industry.

#### Investigate Our Dealer Proposition

Send for full details of the Warner plan and facts about Trailers now in service all over the country. Big and little business both O. K. the Warner Trailer.

Don't miss your share of this most profitable business. Write to us today.

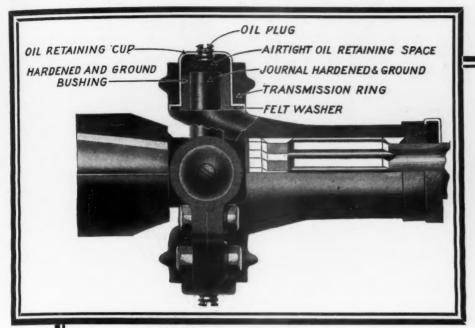
#### Warner Manufacturing Company

Department W

Beloit, Wisconsin

Inter-City Freight in the future will be largely handled by motor. Warner Trailers make possible the truck trains necessary to such service





# ACME Universal "Oiltite" Joints

Acme Perfected Construction Promotes Better Performance

Universal Joint construction and design attain the zenith of perfection in the Acme Universal "Oiltite" Joint. The incorporation of "Oiltites" on your trucks and tractors will greatly increase their capabilities and enhance their values by promoting better performance.

Acme "Oiltite" Universals are simple in construction and are easy to assemble. The absence of complicated, fragile parts eliminates the troubles so common in ordinary universals.

With Acme "Oiltites" on your trucks or tractors, your dealers will have added sales prestige in the fact that they can assure prospective buyers that when the oil cup is once filled the Acme will require no further attention for a year. The "Oiltite" is oiltight and assures perfect lubrication.

Long life and freedom from repair or replacement expense make the Acme "Oiltite" the logical universal for you to buy. Write for complete details and quotations on your requirements.

The Acme Universal Joint Mfg. Company

Kalamazoo, Mich.

#### EMPRESS OIL AND GREASE CUPS



BOWEN PRODUCTS CORP.

SUCCESSORS TO BOWEN MANUFACTURING COMPANY

AUBURN DIVISION

AUBURN, NEW YORK

SEND FOR CATALOGUE "A"

When Writing, Please Say-"Saw Your Ad. in the CCJ"

#### SUPERIOR Drop-Forgings For Truck Parts

We advertise "Superior Drop-Forgings"! Why?

For years there had been no certainty as to quality of steel as it entered into Drop-Forgings. Then we equipped a laboratory for chemical and physical tests; eliminated the material unsuited to the customer's needs. Physically, we found conditions which required special treatments - treatments with which to insure increased strength, better and longer wear. These matters we apply with intelligence—we know what you need and give it to you! Our forgings are better because they are made with a better understanding; made with greater care for better results.

#### J. H. WILLIAMS & CO.

"The Drop-Forging People"

80 Richards Street Brooklyn, N. Y.

Chicago Office and Warehouse: 80 South Clinton Street



The Home of CHILTON Publications

#### Chilton Automobile Trade Service

at \$3,000 Annually

is enabling hundreds of experienced automobile advertisers to realize handsomely on their investment.

The Service includes a full page for a year in the three Chilton publications:

Automobile Trade Journal Chilton Automobile Directory and

Commercial Car Journal

together with the free use of the

Chilton Trade List

Each of these publications is the leader in its respective field, with a large and influential circulation of a result-producing character. By concentrating your efforts in these mediums you thoroughly blanket the industry at a small cost.

Let us give you full particulars

#### CHILTON COMPANY

Publisher

Market and 49th Streets Philadelphia, Pa.



### "NORMA" BALL BEARINGS

The "nerve centers" of the truck or tractor -so may be defined the ignition and lighting apparatus. Weakness, inadequacy, at these centers reacts throughout the machine. Failure at these points means a failure of all the nervecontrolled functions of the outfit. Can a truck, tractor, or man show "stamina," with an inherent weakness at the nerve centers?

> "NORMA" Ball Bearings, by their superlative speed qualities and proved serviceability, contribute mightily to the rugged strength and service capacity of those highgrade magnetos and lighting generators which are the "nerve centers" of all trucks and tractors of proved dependability.

> > Be Sure-See That Your Electrical Accessories Are "NORMA" Equipped

#### THE NORMA COMPANY OF AMERICA

1790 BROADWAY

NEW YORK

Ball, Roller, Thrust and Combination Bearings



## DREADNAUGHT Indestructible. Hub Odometer



#### Speed up your trucks

Help our nation by making every truck do its utmost. Know its mileage. Be certain that every truck you operate covers its maximum distance.

Know its gasoline consumption. Be sure that drivers never let motors idle.

Careful checking reduces operating costs-makes the truck do more.

Mileage must be measured-not estimated.

Install the inexpensive, truth-telling Dreadnaught Hub Odometer.

An informative booklet tells all about its exclusive features. Send for it.

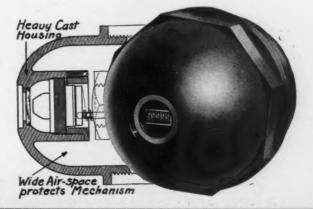
#### AMERICAN TAXIMETER COMPANY

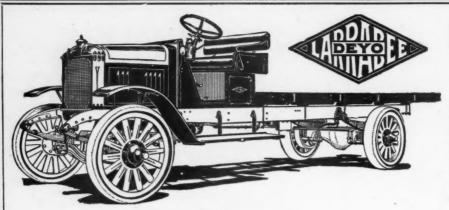
Mfrs. of Jones & Popp Taximeters

S. W. Cor. Broadway and 57th St., New York City

SERVICE STATIONS IN THE FOLLOWING CITIES New Orleans Los Angeles Pittsburgh San Francisco Detroit Boston

Washington
Philadelphia
St. Louis
Buffalo





#### LARRABEE TRUCKS

Buyers of motor trucks demand dependability, durability, simplicity of operation and real service. Larrabee Trucks have proven big business builders and profit makers because they meet every requirement of the discriminate buyer.

#### LARRABEE RELIABILITY

The manufacturers of Larrabee Motor Trucks are one of the most reliable companies in the business. Men of proven experience in the motor truck industry. These trucks are of the standard worm-drive type, now recognized as the most efficient form of construction. Real quality, correct design and continuous service are built into every Larrabee Truck. Capacity, 1 ton up. A Larrabee user is a satisfied customer. A satisfied customer is a business asset.

#### LARRABEE-DEYO SERVICE

This service means skilled supervision of Larrabee Trucks by factory-trained service men. It means that we stand back of every truck and guarantee it in this practical way.

Every buyer of a "Larrabee" not only acquires a superior motor truck in construction and performance but a guaranteed service that is unexcelled.

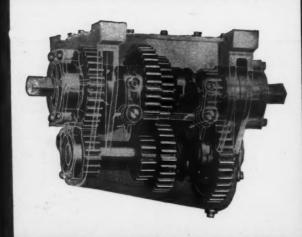
Shrewd dealers are identifying themselves with the Larrabee Truck. Act at once. We may have an opening in your

Larrabee-Deyo Motor Truck Company, Inc. Dept. 14 Binghamton, N. Y.



## COTTA **TRANSMISSIONS**

Gears Always Mesh



An Assurance Dependable Service

The Cotta Transmission Co. Rockford, Ill.

#### Every Truck With a Platform Body Should Have a

#### VERTICAL T FAD-MORRISON CAPSTAN

Here is a winch that banishes waste from loading, hauling and hoisting costs. It reduces the number of men required to half the former number and it does the work in the least



It is Powerful, Compact, Low Priced and is Safe since it is fitted with an AUTOMATIC BRAKE, which absolutely prevents backward turning of the winch head should the driving chain break.

Bronze Bushings, Government Babbitt Metal, Bronze Thrust Washers and Close-Grained Best Iron are used throughout.





## SPYINGS without shackles, bolts or oilcups

Has a larger number of spokes, and each spoke a square inch greater in its bearing surface, than used on any other make. There are still 4 more big, EXCLUSIVE, improved features which make the Armleder the quickest-selling motor truck in America.

> RADIATOR that never leaks or wears out. RADIUS RODS that prevent universal joint trouble.
> FRAME that will not break or sheer out of square.
> SPRINGS. Armleder Patented. Guaranteed not to break or creep.

> > 2 and 31/2 Ton Worm

Drive

#### MOTOR TRUCK

The Armleder dealer can build up a large, lucrative business, as the above 5 special Armleder IMPROVED features CANNOT BE FOUND in any other truck. Because of its SUPERIOR construction, the ARMLEDER Motor Truck greatly reduces service requirements.

#### THE O. ARMLEDER COMPAN

Cincinnati, U.S.A.

Dept. A-3



#### PREPARE

"There is a tide in the affairs of men, which taken at its flood, leads on to fortune."

Prepare now, Accessory and Parts Makers, for your "after-the-war" battle for business.

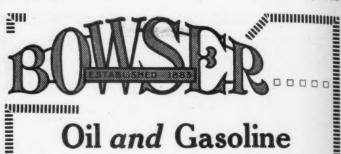
American Business is going to lead the world! Don't flounder **Unprepared** into the greatest struggle for business the world has ever seen.

Figure out Now how peace will affect your business. You can get ready **Now**, by being so thoroughly entrenched that enterprising newcomers will be unable to grasp permanently your trade.

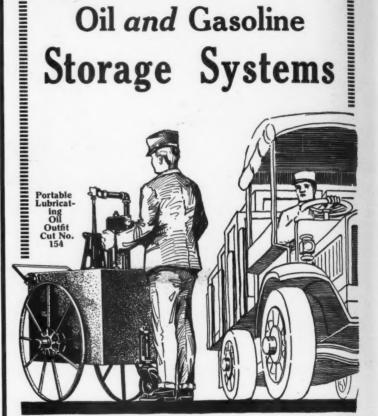
Work to establish your product in one of America's richest markets, the Truck Field. Impress the Trade with your importance.

Advertising now in the CCJ is your best method of establishing your prestige; of insuring you against the buying of substitutes by your trade.

The CCJ is the "World's Leading Commercial Car paper." It blankets the Truck Industry. .



## Storage Systems



#### Make the Truck Last Longer

Remove the possibility of damage to moving parts caused by impurities in oils and gasoline. Bowser Systems make sure that the oils and gasoline you furnish your trucks retain their original value and power, you know you are getting all the oil quality you expect. Bowser Systems are time, labor and money savers; prevent waste, careless handling of your high-priced oils. Keep an accurate record of all oils and gasoline pumped. Are tamper and fireproof. Put the handling of volatile liquids on a safe-systematic-business basis.

Tell us your needs-today.

#### S. F. BOWSER & COMPANY, Inc.

Fort Wayne, Ind., U.S.A.

Sales Offices in all Centers Representatives Everywhere



## FRAMES

for

Trucks - Pleasure Cars - Tractors - Trailers
also BRAKE DRUMS and
Large Steel Stampings of every kind

The Parish & Bingham Co.

Cleveland, Ohio

#### CLEVELAND WORM GEARING

#### THREE SOUND POINTS:

Correct Design--insured by engineers with over 25 years' actual experience.

Proper Selection of Materials—based on practical results of 25 years' production.

Special Machinery for Their Cutting—Designed and perfected in our own factory by engineering and production ability.



#### THE RESULTS:

Reputation--Ask the prominent users of worm gearing.

**Durability**—No worm gearing has ever been returned for faulty design and material.

Patronage—Larger than that of any competitor.

#### THE CLEVELAND WORM GEAR COMPANY

CLEVELAND, OHIO

REPRESENTATIVES

THE INDUSTRIAL EQUIPMENT CO. 223 Main Street, San Francisco, Cal.

C. F. QUICKE & CO. 315 Euston Road, London, Eng.





\* 0.00×10.00×10.00×10.00×10.00×

TRUCK SPECIAL

A manufactured upholstery material superior to leather for rugged service. Used on thousands of war trucks and high-grade commercial cars.

Truck Special meets ALL the tests of motor trucking. It is WATER-PROOF, GREASE-PROOF, STAIN-PROOF and WASHABLE—built for hard work and hard weather.

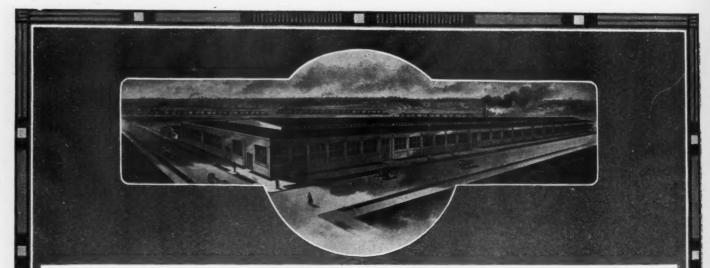
Truck Special comes in 60 yard rolls, 50 inches wide. It cuts in multiples by machine—there is no waste of material or labor.

Truck Special is the most durable and economical material of its type. It has Uncle Sam's O.K. for government work

INDISTRIES EDONOS DODOS GODOS EDODOS SE

We will send a sample of Truck Special large enough to upholster one cushion to any truck manufacturer requesting it.

DU PONT FABRIKOID COMPANY
Wilmington - Delaware
CANADIAN FACTORY AND OFFICE
New Toronto, Ontario, Canada



Hoods Fenders Tanks Stampings
Sod Pans—For Trucks and Tractors
We Furnish Heavy Gauge, Acetylene Welded Tanks for Trucks
Ford Crown Fenders

Send Your Blue Prints for Quotations

Motors Metal Manufacturing Company
Detroit, Michigan



The Sign of Service

#### Ahlberg Remade **Bearings**

Are a quality product. They are the result of ten years' effort to do the little things better.

All the stored-up knowledge of these years goes into our product. It is the little things that make the difference between Ahlberg Remade bearings and others.

Then, too, is a complete factory organization with the single aim of turning out the best in Remade bearings.

To get closer to the Trade, there is the Ahlberg chain of offices located in twelve cities. Each office is in charge of a ball-bearing expert and each office has a complete stock of all types, sizes and makes of new Ballbearings in addition to its stock of remade bearings.

We are also distributors of Hess-Bright new bearings.

Conrad Patent Licensee

#### Ahlberg Bearing Company

St. Louis, 2831 Locust St. Minneapolis, 926 Marquette Ave. Cleveland, 1836 Euclid Ave. Atlanta, 323 Peachtree St. Portland, 325 Davis St.

Locust St.

6 Marquette Ave.
Euclid Ave.
achtree St.
New York, 1790 Broadway
Boston, 93 Massachusetts Ave.
Main Office: 2636 Michigan Ave., Chicago

may be fine, but how about the machinery?

The housing facilities

You might think of a Hub Odometer as a little manufacturing plant, whose product is mileage.

You may like the outside looks of the plant; the "housing facilities" may be fine, but—how about the machinery?

The machinery, the recording mechanism that grinds out the mileage—that's the thing to consider in a Hub Odometer. It's the thing that sells the



Why not size up the strength of this mechanism yourself; buy on the evidence of your own sight and senses? Any Veeder Distributor will gladly show you the works.

Parts subject to hardest wear are made of hardened steel. Dials and interlocking gears are made of brass or bronze. Studs upon which the dials re-value are of Gerwhich the dials revolve are of Gervolve are



The Veeder registers forward, whether truck runs forward or backward. Price, \$20. For Ford cars, \$15. All required information in leaflet-sent gladly.

The Veeder Mfg. Co. Hartford, Conn.

10 Sargeant Street New York Distributor Joseph T. Quinlan 1777 Broadway

Detroit Distributors Geo. F. Balk Sales Co. 650 Woodward Ave.

Chicago Distributors C. G. Wirick Co. 617-619 Fulton St.

Pacific Coast Distributors to Jobbers and Dealers
F. Somers Peterson Co.
60 Pine St., San Francisco, Cal.

Pacific Coast Distributor to Automobile & Truck Mfrs.
Alfred H. Coates
444 Market St., San Francisco, Cal.



#### SEAMLESS HELICAL TUBE COOLING SECTIONS

are guaranteed for the life of the truck on which they are installed. They are perpetual insurance against radiator trouble. They satisfy all of the exacting requirements of the most critical engineers. They are the last word in modern radiator construction.

Ask us for information.

Our Engineering Department is at your

service.

Sole Manufacturers

Rome, N. Y., U. S. A.



From the very inception of the automobile industry, the Spring Perch Company has given continuous evidence of its skill and the adequacy of its equipment to handle every spring problem that can arise, to the best advantage—of both maker and user.

Spring Perch Company

Bridgeport, Conn.



#### Sell a Truck With a Future

When taking a motor truck agency, dealers should be very careful to get a truck with a good future ahead. It is foolish for any dealer to put his money and efforts into a truck proposition where the company is not financially strong. It is also important to become a dealer for a truck that will stand hard usage and give long service, because right there is the secret of satisfied owners, repeat orders and profits.

dealer for a truck that will stand hard usage service, because right there is the secret of satisficorders and profits.

UNION Trucks are being sold by reliable dealers all over the country. They know that the good UNION reputation and sound

sell UNIONS because they will be just as good in the future as they are now. UNION dealers everywhere dominate the truck field, because UNION Trucks are giving a grade of service that is speeding up sales north, south, east and west.

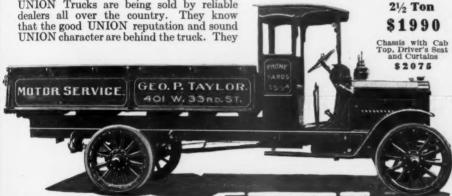
These UNION features make initial sales develop repeat orders. They are really what make UNION Trucks easy sellers. The four-bearing, instead of three, 45 H. P. Wisconsin Motor gives plenty of power and consumes a minimum amount of gas. The drive shaft

floats between two springs, relieving transmission and pinion-shaft bearings of all shocks and strains. All tires are demountable. Welded steel gasoline tank on cowl. Standard gauge front and rear axles—56".

Such things as these are responsible for service and durability. These features and many others, make the UNION the dominating truck with big sales.

The UNION agency proposition is liberal and inviting. Write or wire today.

Union Motor Truck Company Bay City, Michigan





SRB Improved Type
Taper Roller Bearings



STANDARD ALLOY STEEL BALLS

Rudge-Whitworth Wire Wheels

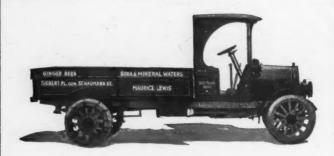
STANDARD HOLLER-BEARING PRODUCTS

Sales Offices:

DETROIT CHICAGO INDIANAPOLIS BOSTON CLEVELAND SAN FRANCISCO 936 Woodward Avenue 2206 S. Michigan Avenue 822 Hume-Mansur Building 163 Massachusetts Avenue 2062 Euclid Avenue 41 Spear Street

#### STANDARD ROLLER BEARING CO.

Philadelphia, U.S.A.



11/2 Ton Worm-Drive Chassis, \$2150.00 Ton Worm-Drive Chassis, \$2600.00

**Buda Motor Brown-Lipe Clutch** Bosch Magneto Timken Worm Drive **Brown-Lipe Transmission** Timken Bearings Throughout

This high-grade Transmission and Power Plant is mounted on a chassis exceedingly well designed and very substantial.

ou will find this a profitable line to handle.

The durability and efficiency of these trucks enable you to secure your customers' repeat orders and build up a clientele of satisfied users.

Sullivan Motor Truck Corporation Rochester, N.Y.

The Gill is a one-piece ring, so constructed that the opening is always sealed. Hence, vapor cannot escape from the combustion chamber or oil work. into it.

The Gill is a big seller, because it combines the advantages of multiple rings with the strength and simplicity of the one-piece -making a far better ring than either type.

> Gill Rings improve the action of any motor.

The Gill Manufacturing Co.

351 W. 59th Street

Chicago, Ill.

(Formerly The Chalsmith Co.)



## Universa

#### **MOTOR TRUCKS**

Our Increased Output Offers You Great Opportunities

Our decision to increase the output of Universal Motor Trucks for 1918 offers to alert and high-grade dealers the opportunity of a lifetime to affiliate themselves with a truck of overshadowing superiority.

For Universal Motor Trucks since being placed on the market have completely satisfied their purchasers from every standpoint-in their ability to carry overloads uncomplainingly and unflinchingly, in their willingness to give full measure of service and in their infrequent visits to the repair shop. Not one of the 1500 Universals sold has ever been "scrapped" - every one is still in use rendering faithful service to their purchasers.

In territory where we are not now represented at present we invite correspondence with well-rated dealers with reference to handling this great truck. We would advise prompt action.

3 MODELS

1½ Ton—Worm Drive 3 Ton—Chain Drive 3½ Ton—Chain Drive

UNIVERSAL SERVICE COMPANY Detroit, Mich.





#### "The Most Advanced Truck in America"

Its magnetic transmission effects a great saving in wear and tear on the motor, chassis and tires—and substantial economy in operating costs.

WRITE FOR DETAILS

Bourne Magnetic Truck Company
Fifth Avenue and 142nd Street
New York City

w eat



#### GUARANTY

INTERNAL GEAR-DRIVE UNIT



PRICE: 1 Ton, \$390; 2 Ton, \$490

The most reliable Unit made, combining latest improvements in truck construction, including ball-bearing connection, Torbensen axle, openhearth steel springs, heavy 4" steel channel frame. Bodies furnished suitable to any business.

Write today for information and booklets.

MANUFACTURED BY

GUARANTY MOTORS CO.

CAMBRIDGE MASSACHUSETTS

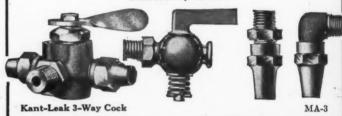


#### The Michigan Kant-Leak Gasoline Cocks

are absolutely proof against leaks. We make a complete line of them with the different sizes and styles of connections.

We also make a very complete line of Brass Motor Fittings, including priming cups, sediment traps, drain cocks, S. A. E. fittings, etc., etc. We carry good stocks and can make prompt deliveries. Printed matter and prices on application.

MICHIGAN LUBRICATOR COMPANY DETROIT, MICH.



For Commercial Cars—This

## **DURSTON**TRANSMISSION

The logical truck transmission, because it is designed for greater capacity and durability—capable of giving sterling performance under hard service day in and day out.

We are prepared to offer designs for motor trucks up to  $2\frac{1}{2}$ -ton capacity.

Our engineering department is in position to give the kind of cooperation you will appreciate.

DURSTON GEAR CO., Inc. 29 Maltble St. Syracuse, N. Y.

DUR 29 Ma

"Gears of Lasting Fame"



#### PANHARD Motor Trucks

1 Ton \$985

11/2 Ton \$1185

Never in the history of the motor truck industry has there been offered such wonderful values as are presented in Panhards. Look at the low prices, study the construction, consider the service they give and you'll see a great chance for you to make big money. Gray motors, Auto-Lite ignition, Willard batteries, Perfex radiators, Schebler carburetors, Torbensen drive, Stewart-Warner vacuum system, Firestone tires, electric lights and double chassis frame are just a few of the specifications that prove astounding quality for the money.

The demand is great, the field big, the possibilities for profit making tremendous. Wire today about your territory.

Hamilton Motors Corporation
Grand Haven Michigan



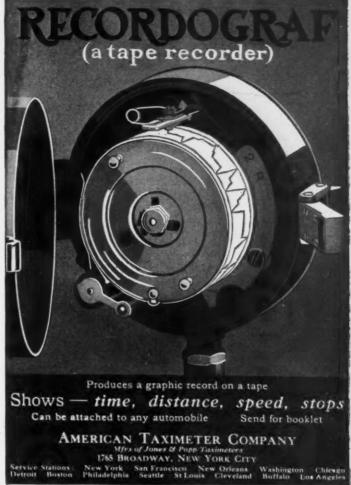
### Pressed-Steel Parts Stronger —But Lighter in Weight

"The Bossert Way" has proved that bulk and excess weight are not essential to great strength in truck and tractor parts. And lighter weight is the quality much sought by the foremost truck and tractor manufacturers. Bossert Pressed-Steel Parts solve that problem in a thoroughly efficient manner, because they are lighter in weight and stronger than the malleable iron or drop-forged parts they replace.

Bossert Pressed-Steel Parts cost less than the other types. This point should command your attention. Our service to manufacturers is thorough and complete. We offer over 200 Bossert Parts, many of which will satisfactorily meet your requirements.

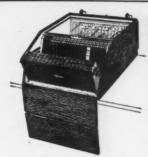
Write us, explain your problems and we will show you how "The Bossert Way" will overcome your difficulties.

The Bossert Corp. Utica.N.Y









N. C. R. Credit Fill for 180 Accounts

### Install The N. C. R. System in Your Garage

The N. C. R. system in your garage will prevent disputes and protect you and your customers.

It protects your profits.

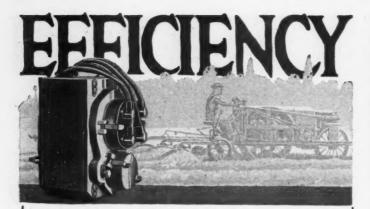
It enables you to tell right where you stand in volume of sales and profits.

To Dept. 8, National Cash Register Company

Please send me full particulars of your cash register for a garage, and the N. C. R. Credit File.

Name\_

Address.



#### "A Better Spark in a Simpler Way"

THE elimination of moving wires, brushes, slip-rings, and the assembling and mounting of the stationary coil as a unit, are two basic features of a new and superior principle of design, making for greater simplicity, greater durability and increased efficiency.

One of the PROVEN FACTS of

#### The TEAGLE High Tension MAGNETO

for Trucks and Tractors—two, four, or six cylinders—with fixed or variable spark. Conforms to S. A. E. standards. Write for booklet.



THE TEAGLE COMPANY CLEVELAND, O.



## GRANT TRUCKS THE PAINEVILLE Cog locate POTITING CO.

#### Modern Design Makes Sales

ELECTRIC starting and lighting equipment, internal-gear drive axle, straight-line drive, complete equipment and extremely low price are the sales winning combination you get in GRANT TRUCKS.

1800-lb. Truck \$1020 1½-ton Truck 1490 2-ton Truck 1790

There are a number of good territories still open—but they won't be open long. Write today

Grant Motor Car Corporation

#### Don't Play With Fate

Statistics show the immense loss of life and property in the antomobile world due to fire and explosion originating in a leaking "gas" receptacle.



THE

#### "JASCO" TANK

never leaks. It is made of the finest selected steel, seamless—thoroughly tinned and tested. The roughest service leaves it intact. Styles and sizes for every car.

#### JANNEY, STEINMETZ & COMPANY

Main Office: Philadelphia

New York Office: Hudson Terminal Building

### Spicer Universal Joints





Universally Accepted as the Most Dependable Flexible Connection Known to Motor Car Practice

Grease-Tight Dust-Proof

PARTS INTERCHANGEABLE

Spicer Mfg. Corporation
South Plainfield, N. J.

Sales Representatives:

A. H. Coates, 41 Spear Street, San Francisco, Cal. L. D. Bolton, 2215 Dime Savings Bank Bldg., Detroit Foreign: Benjamin Whittaker, 21 State Street, New York

## MAXFER THE WHALE FOR WORK TON TRUCK

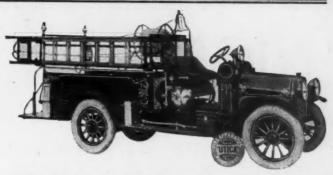
The Exceptional One-Ton Worm-Drive Truck—the Truck all real dealers are tying to—\$1195 Complete with electric starting and lighting. Express or stake body, cab and windshield.

Dealers: How about your territory?

Maxfer Truck and Tractor Co.

Offices and Harvey, Illinois

Also Makers of the Famous Maxfer Ton Truck Maker



#### "Childs" Fire Equipment

For any type of chassis.

Furnished complete or separate.

Write for Bulletin No. 49

Witte for Battetin No. 45

O. J. Childs Co. Utica, N. Y.



#### Heavy Duty Truck Frames

Our Heavy Duty Truck Frames are especially designed for severe and unusual service. These are frames you want if you build a high-grade truck. They live up to every claim we make for them.

Our engineers are at your service, and we solicit your inquiries.

Savage Arms Corp.

Driggs-Seabury Ordnance Co. Sharon, Penna.

## "M. & E." Ratchet Top GREASE CUPS

Because of their strong construction, fine finish and large grease capacity, have become standard equipment with such well known truck manufacturers as the Packard Motor Car Co., Autocar Co., and Four Wheel Drive Co.

#### WILL NOT JAR LOOSE

The interior spiral spring engaging in the corrugations at the top of the cap positively prevents it from rattling off.



Send now for prices and a sample cup.

Manufacturers of

Evans Model "Hele-Shaw" Clutch "Evans" Universal Joints

MERCHANT & EVANS CONNEW YORK PHILADELPHIA WHEELING

ATLANTA CLEVELAND

#### HIGHLAND

#### Commercial Bodies Backed by 25 Years' Experience

To build the right commercial body for a given purpose requires both skill and experience. We have been making them for well over a quarter of a century, and today most of the leading truck-builders are glad to avail themselves of our co-operation.

Talk over your problems with our representative.

#### Highland Body Mfg. Co.

317 Elmwood Place Cincinnati, Ohio

## MOLTRUP'S

#### Crankshaft Machining

Quality, accuracy and reliability are the three prime factors required in Crankshaft Machining. Twenty years' experience, unsurpassed equipment and extreme vigilance over every detail makes our work the best that can be produced.

Recent additions to our plant make it possible to increase our capacity. These additional facilities enable us to handle your work with even greater promptness than before.

Send your blue-prints and let us submit quotations on absolutely *correct* and *accurate* crankshaft machining.

Prompt Deliveries

Moltrup Steel Products Co.
Beaver Falls, Pa.

#### THE FULTON TRUCK

11/2-Ton Capacity

Has Created the World's Standard in Motor Truck Value

If you are interested in a real moneymaking agency where selling resistance has been reduced to a minimum, communicate with us *now*.



#### CHAMPION



DROP FORGINGS

Axles---Gear Blanks---Cranks

Heading Machine Forgings Steam Hammer Forgings Forgings Without Draft

We have the facilities to serve you promptly, efficiently and economically on any of the above. Send us your blue prints for estimates.

The Champion Machine & Forge Co.







Built like the best known American heavy trucks, with all their successful features, including worm drive, deep frame, long wheelbase and special truck motor. Used in quantities by hundreds of leading firms throughout the country with whom first cost is not the deciding factor.

Half-ton Chassis \$995

One and one-quarter-ton chassis

\$1350

#### ainier Motor Poorporation

Factory, Flushing, L. I., New York Sales Dept., 225-227 West 58th Street

SOME SPECIMENS OF OUR

#### FORGINGS



These are but a few of the many automobile forgings upon which we have built a reputation. Our facilities are complete, our service prompt and the quality of our forgings unsurpassed. We can satisfy you.

The Union Switch and Signal Company SWISSVALE, PA.

Two miles east of Pittsburgh, Pa.



#### MORE PROFITS FOR AUTOMOBILE DEALERS

The Fruehauf Trailer agency offers a wonderful opportunity to aggressive automobile dealers who are following the trend of development in the transportation field.

#### *FRUEHAUF TRAILERS*

can be used profitably in all lines of business and every truck owner is a live prospect for a Fruehauf Trailer. Write for our new catalog and our dealer proposition.

FRUEHAUF TRAILER COMPANY 1302 Gratiot Avenue

DETROIT



Hauling Loading

Unloading Fruehauf Trailers keep wour truck busy hauling-idle time eliminated

CAPACITIES: 1 to 10 TONS



**BORG & BECK** 

Single Plate Dry Clutch

SIMPLICITY of design, light friction disc, light spring, convenience and infrequency of adjustment, slipping grip, so gradual in action as to make a "starting grab" or "jerk" impossible, mark the commendable features of this clutch.

Note:—This clutch furnished, in various sizes, to fit all standard unit power plant transmissions.

The Borg & Beck Co., Moline, Ill.

Largest exclusive automobile clutch manufacturers

#### Announcement!

We are now in a position to offer the trade a high-grade  $2\frac{1}{2}$ -ton worm-driven axle. Can make immediate deliveries on 1 and  $1\frac{1}{2}$ -ton axles. Let us have your specifications and requirements so that we may quote you and send you blueprints.

Engineering & Sales Corp.
122 S. Michigan Ave., Chicago, Ill.





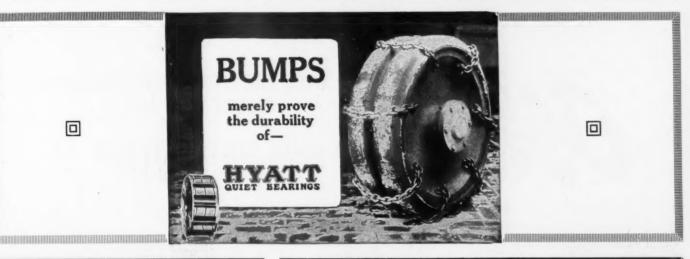


-1½" to 3¼" Prices-\$4.00 to \$6.00

Gases expelled to the rear through patented flared opening, prevents all back pressure. Lever has seven adjustments, which make easy installation. Spring is away from the body of Cut-out, does not absorb heat, has a simple tension adjustment and easy action, no strain on the exhaust pipe.

Ends accurately machined for pipe size and fitted with set screw, which insures a permanently rigid installation.

N. A. Petry Company, Inc., 1319 Race St., Philadelphia



#### HARTFOR

CLUTCHES

**JOINTS** 

Exclusive manufacture of these two articles—that in a few words is the secret of our growth and the reason why our two plants are constantly operated to capacity production.

Send us your blue-prints or specifica-tions and allow us to submit prices.

The Hartford Automobile Parts Co. HARTFORD, CONN.



#### Woonsocket Bodies

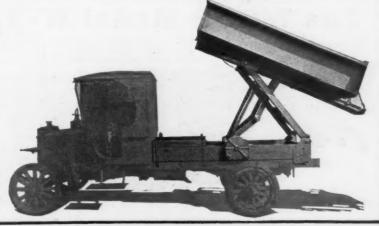
Special Rear Elevating and Dumping, 1-6 Ton Capacity

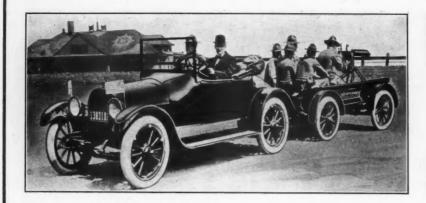
Contract Work a Specialty

Woonsocket Wagon Mfg. Co.

Woonsocket

Rhode Island





#### Big Profits for Dealers With the Northway Line

In unoccupied territory we have a proposition for YOU—ask us about it.

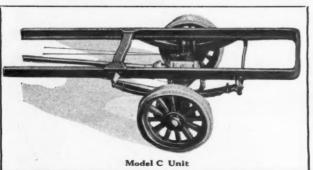
NORTHWAY TRAILERCAR CO.
Department 19
East Rochester, N. Y.



IT WILL PAY YOU TO INVESTIGATE
THE ACASON LINE

ACASON MOTOR TRUCK CO.
DETROIT, MICH.

#### Stevenson Worm-Drive Truck Units



For Fords and Other Cars

"Built to Stand Up"

Model C, 11/2 Ton Universal Unit

for attachment to Dodge, Buick, Chevrolet, Oakland, Cadillac, etc., 5" Frame, Wisconsin 1½-ton Axle, Semielliptic Spring, Hotchkiss Drive, 32"x 4" Tires. Price \$550.00, ready to attach, f.o.b. East Orange. Three Models for Fords.

Dealers wanted. Write for particulars

Hedden Place Machine Co., Inc.

East Orange, N. J.

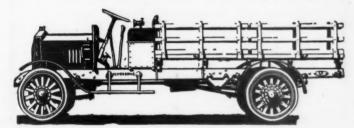
# The WOOD Model W-3 Steel Dump Body The great utility and cleverness of this model W-3 steel dump body have so appealed to both buyers and competitors that it is necessary to warn against its usage unless it bears our marked patent number: "Licensed under patent No. 1,223,462." A new body plant enables us to accept quantity orders and make prompt deliveries at moderate prices. Wood Hydraulic Hoist & Body Co. Detroit, Michigan Patented April 24, 1917

#### CLYDESDALE



Motor Trucks of ¾ Ton to 5 Ton Capacity

THE CLYDE CARS CO., Clyde, Ohio







OHIO Steel Castings are made to your specific requirements. The indisputable superiority of the Ohio materials and methods are good reasons why you should incorporate Ohio Castings in your product.

We guarantee every casting we sell, no matter whether it weighs five pounds or five tons.

Send us your blue prints for estimate

THE OHIO STEEL FOUNDRY COMPANY Springfield, Ohio Bucyrus, Ohio Lima, Ohio



#### DIAMOND T TRUCKS

In eleven years of continuous service not one Diamond T has ever worn out. That means permanent satisfaction on the part of every user—and repeat orders for every dealer.

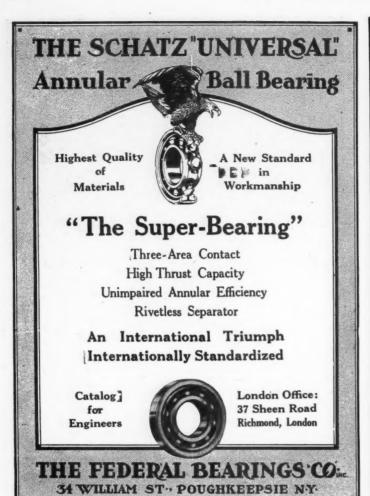
Now ready or national distribution, in the following sizes:

Model J-5—One Ton Model J-3—Two Tons Model J-4—One and One-Half Tons

Model L-B—Three and One-Half Tons
Model R—Five Tons

Write for Full Particulars and Agency Terms

Diamond T Motor Car Company 4509 W. 26th Street CHICAGO



### Phenix Truck Maker

A truck maker designed by veteran automobile truck engineers who have long admired the Ford pleasure car chassis and have believed that, with the proper attachment, it can be made into an unrivaled one-and-one-half or a two-ton truck.

#### The Truck that Hauls for Half

Simple, strong throughout, durable, makes a truck of really high efficiency. The PHENIX has already made a splendid record among users.

Dealers desiring to build a permanent business in trucks, with 100 per cent satisfied customers, write for our terms.

PHENIX TRUCK MAKERS Inc.

2337 So. Michigan Ave.

Chicago

## DOEHLER BABBITT-LINED BRONZE BEARINGS

The bronze used in these bearings is of the coppertin-lead type, alloyed by us from the highest grade

metals obtainable. The Babbitt is of the tin-antimony-copper variety, absolutely free from impurities.

The Babbitt lining is joined to the bronze shell by a special process, of our own development, which results in a uniform, sound, and homogeneous unit.

The CONSISTENT use of these bearings, year after year, by the most prominent Motor builders in the country is ample proof of their merits.

DOEHLER DIE GASTING CO.
BROOKLYN. N.Y.
NEWARK.N.J. TOLEDO. OHIO.

Connecting-Rod Bearing On Eight-Cylinder Motor

> Also Die-Cast Babbitt Bearings. Die-Castings in Brass & Bronze, Aluminum and White Metal Alloys



Now being used by over five hundred leading manufacturers. Where our engineers specify this process it will absolutely prevent the action of rust. In the making—selling—and using—rust-proof is of inestimable quality. Let us tell more about what we can do for you.

Parker Rust-Proof Company of America

Detroit - - Michigan



#### THE IDEAL GOVERNOR

These 8 features have caused 35 leading truck manufacturers to adopt the Monarch Governor as standard equipment.

- 1. Has no connection to any moving part of the engine or vehicle.
- 2. Requires no oiling or attention.
- The only governor designed solely for internal com-bustion engines.
- Has no revolving parts; requires no gears or shafts to drive it.
- 5. Installed on any gas engine without mechanical trouble.
- 6. Regulates the speed of the engine accurately-always.
- Acts instantaneously and automatically with the changing engine load.

8. Padlocked any desired speed; driver-proof.

Get descriptive booklet of the governor that limits the speed and the expense.

#### MONARCH GOVERNOR COMPANY 528 Bethune Avenue Detroit, Michigan



#### THE TEN-YEAR TEST

Has Proved the Efficiency of the Duplez 4-Wheel Drive Principle

There is nothing new about the principle of making EVERY WHEEL A DRIVER!

Duplex originated it ten years ago.
Only the first model was experimental. And it was this model which shattered all existing records for hauling, hill climbing, and exacting road-ability under the severest conditions.
Today, the Duplex Truck is a product of EXPERIENCE.
To Dealers: With production trebled, our dealer organization is being enlarged. Write for our dealer proposition and the heavy haulers' magazine, "Duplex Doings," issued in the interest of better transportation methods.

Address all communications to Dept. 108

DUPLEX TRUCK COMPANY

Lansing, Mich.



#### IZONTAL HOISTS

"ALL-PURPOSE" BODIES

Send for your copy of our new HOIST AND BODY PRICE LIST

#### YOUNG PATENT HOIST COMPANY

35 Twenty-Fifth Street MILWAUKEE

## RAGESER ANKS



No. 16 Gauge Steel Terne Coated or Galvanized All Seams Welded No Rivet-No Solder Deliveries Guaranteed

> Write for Catalogue Established 1850

John Trageser Steam Copper Works 447-457 West 26th Street **New York City** 

#### CULLMAN SPROCKETS

in stock and to order.



For Block, Roller and High Speed Silent Chains. New Catalog.

Cullman Wheel Co., 1351 Altgeld St., Chicago





#### HOIST AUGLAIZE

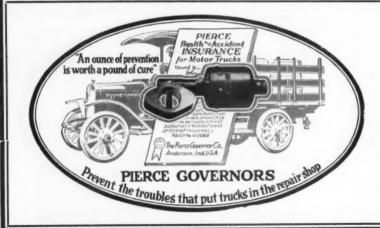
#### **Quadruple Worm Gear Drive**

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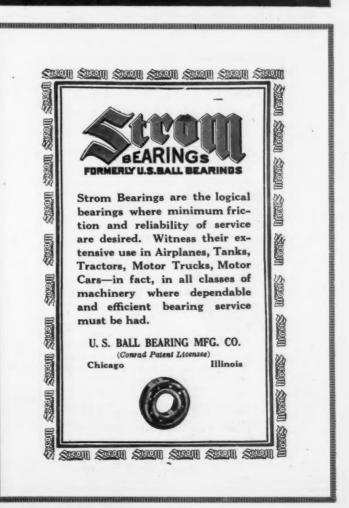
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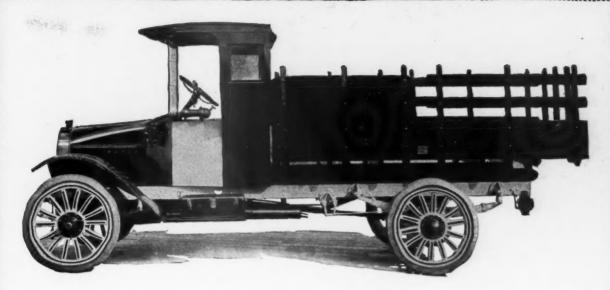
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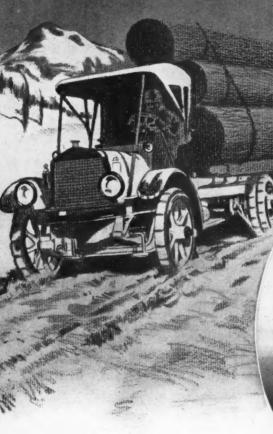
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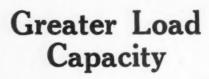
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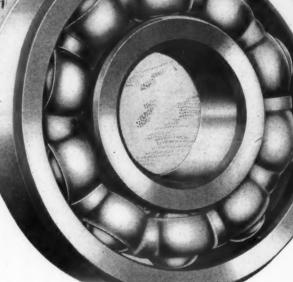
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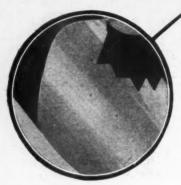
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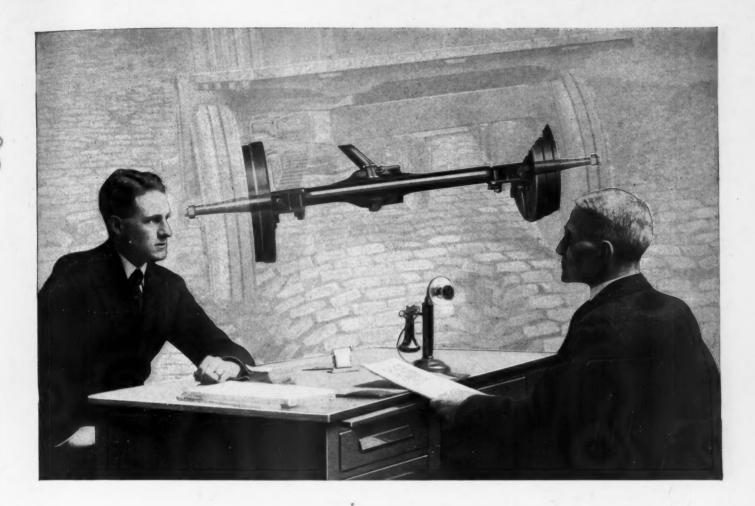
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The City of Goodrich-Akron, Ohio

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This greatly increases the carrying capacity of this member and entirely eliminates the chance of spindles breaking.

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Russel Motor Axle Co.

North Detroit

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"As I remember your truck," said the Truck Buyer, "the rear axle is the RUSSEL Internal-Gear Drive which has the jackshaft in front of the load-carrying axle. Why is that?"

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"How is that?" asked the Truck Buyer.

"When the driving member is in front of the dead axle," continued the Salesman, "the pressure of the pinion teeth on the internal gears is in a downward direction, consequently there is a lifting force applied to the whole axle.

This takes considerable weight off the wheel bearings."

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"And in addition to the effect on the bearing loads," added the Salesman, "there is an equally important tendency to keep the pinion teeth and internal-gear teeth in perfect alignment when the axle deflects under an excess load. This is only the case where the driving member is placed in front of the load-carrying member."

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